iift

Indian Institute of Foreign Trade

SURVEY
of
INDIA'S EXPORT POTENTIAL
of
MARINE PRODUCTS

March 1970

Vol. III B (of six)

FOR LIMITED DISTRIBUTION ONLY

SURVEY OF INDIA'S EXPORT POTENTIAL OF MARINE PRODUCTS

prepared under the sponsorship of
THE EXPORT PROMOTION DIVISION
U.S. Agency for International Development, New Delhi
for
THE MINISTRY OF FOREIGN TRADE
Government of India

INDIAN INSTITUTE OF FOREIGN TRADE
NEW DELHI

CENTRAL FOOD TECHNOLOGICAL RESEARCH INSTITUTE, * MYSORE. *
LIBRARY
22.1.72

VOLUME III

Survey of India's Export Potential of Marine Products

VOLUME III

Contents

Page

1. Problems of Production 1

1.1 Fishing Craft 2
1.2 Fishing Gear 54
1.3 Electronic Equipment 74
1.4 Diesel Fuel 79
1.5 Payment to Crew 84
1.6 Manpower for Fishing Vessels 91
1.7 Economics of Boat Operation 102

2. Problems of Processing 129

2.1 Structure of Fish Processing Industry 129
2.2 Processing Methods 158
2.3 Preshipment Inspection and Quality Control 203
2.4 Problems of Frozen, Canned and Dried Fishery Products 251
2.5 Fishery By-products 270

3. Problems of Export Marketing 292

3.1 Existing Marketing Practices 293
3.2 Competition 302
3.3 Need for Diversification: Markets and Products 314
3.4 Export Price and Unit Value Realisation 324
3.5 Packing and Packaging 333
3.6 Shipping Facilities and Freight Rates 345
3.7 Export Trade in Dried Marine Products 360
3.8 Domestic Consumption 373
3.9 Incentives for Export of Fishery Products 382
3.10 Marketing of Fish in India 389
3.11 Fish Marketing Organisations in Selected Countries 399

4. Finance and Credit 418

4.1 Domestic Finance 423
4.2 International Finance and Credit 450
4.3 Financial Assistance to Fishery Industry 460
4.4 Joint Ventures for Fishery Industry 504

List of Tables

		Page
A-1	Number and Types of Indigenous Fishing Crafts in Maritime States of India	4
A-2	Number of Mechanised Boats Introduced in India	7
A-3	Requirements of Mechanised Boats at the end of the Fourth Plan	8
A-4	Mechanisation Programme for the Fourth Plan	10
A-5	Distribution of Medium and Large Vessels in Various States during Fourth Plan	12
A-6	Centre-wise distribution of Proposed Fishing Vessels by the end of 1978-79	13
A-7	Proposed Introduction of Medium and Large Vessels	14
A-8	Number of Boat Building Yards in India	18
A-9	Cost of Boats (Hull and Engine)	30
A-10	Comparative Cost for the Supply of Large Vessels	34
A-11	Amount of Subsidy for Fishing Vessels	35
A-12	Production of Marine Diesel Engines	37
A-13	Estimated Requirements of Marine Diesel Engines during the Fourth Plan	38
A-14	Cost of Indigenous and Imported Engines	42
A-15	Requirements of Electronic Equipment	77
A-16	Average Weekly Earnings of Fishing Crew in UK	88
A-17	Location of Fishermens' Training Centres	92
A-18	Cost of Boat Operations in Kerala Sector: 1968	104
A-19	Annual Net Returns in Boat Operations	111
A-20	Economics of Operation of 13.8 m Trawler (120 BHP) in Maharashtra, Madras, Tuticorin and Visakhapatnam	113
A-21	Economics of Operation 13.8 m Trawler (120 BHP) in Kerala, Veraval and Goa-Mangalore	115
A-22	Economics of Operation of 17.5 m trawler (200 BHP) in Maharashtra	117
A-23	Economics of Operation of 17.5 m Trawler (200 BHP) in Goa-Mangalore and Kerala	119
A-24	Economics of Operation of 17.5 m Trawler (200 BHP) in Veraval and Visakhapatnam	121
A-25	Economics of Operation of 17.5 m Trawler (200 BHP) in Tuticorin-Madras	123
A-26	Economics of Operation of 22.0 m Trawler (350 BHP) in all Maritime States	125
A-27	Economics of Operations of 27.2 m Trawler (450 BHP) in all Maritime States	127

Page

B-1 Locational Distribution of Freezing Facilities 130
B-2 Locational Distribution of Canning Facilities 132
B-3 Regionwise Distribution of Export Firms 133
B-4 Trends in Capacity Utilisation in Selected Freezing and Canning Firms 136
B-5 Distribution of Processing Firms by Export Performance during 1968 139
B-6 Production and Exports of Selected Firms (1967-68) 141
B-7 Percentage Yield from Raw Material of Different Varieties 143
B-8 Trends in Wholesale Prices of Indian Shrimps in the US Market 145
B-9 Trends in Raw Material Prices in Kerala 146
B-10 Percentage Distribution of Sizes in Frozen Prawn Exports 147
B-11 Share of Raw Materials Costs in the Ex-factory costs of selected firms 150
B-12 Average ex-vessel Prices of Shrimp per lb., US Cents, from Gulf States 152
B-13 Source of Raw Material Purchase 153
B-14 Cost of Production of Frozen Fish Fillets 173
B-15 Effect of Sodium Tripolyphosphate and Potassium Dihydrogen Phosphate mixture on thawed & cooked yields 193
B-16 Proposed Mandatory Fish Inspection Bills Pending in 91st Congress 219
B-17 Quantities Rejected at the Preshipment Inspection Stage during 1965-68 237
B-18 Percentage of Samples Falling into Different Ranges of Bacterial Count According to type of Frozen Products 242
B-19 Bacteriological Analysis of Peeled, Deveined Frozen Shrimp of India 243
B-20 Composition of Fish Meal in India 274
B-21 Composition of Prawn Shell and Head 276
B-22 Composition of Fish Ensilage from Different Varieties of fish 278
B-23 Exports of Fish Oil from India 280
B-24 Cost of Production of Sardine Oil and Meal and Other Products 281
B-25 Export Figures for Fishmaws and Sharkfins 284
B-26 Composition of Fish Protein Concentrate from Trash Fish 288

		Page
C-1	Imports of Shrimp into USA	308
C-2	Imports of Shrimp into Japan	310
C-3	Exports of Marine Products from India, by item	314
C-4	Exports of Marine Products from India 1964-65 to 1968-69 (Destinationwise)	317
C-5	Share of Major Markets in Exports of Marine Products from India	321
C-6	Unit Value Realisation of Export of Marine Products	325
C-7	Representative Wholesale Prices of Frozen Shrimp (Headless Shell-on White) in the US Market (September, 1969) (Monthly Average)	326
C-8	Representative Wholesale Prices of Frozen Shrimp (Peeled and Deveined: IQF) in the US Market (September, 1969) (Monthly Average)	327
C-9	Representative Wholesale Prices of Frozen Froglegs in the US Market	327
C-10	Representative Wholesale Prices of Frozen Lobster tails (Spiny) in the US Market (September, 1969) (Monthly Average)	328
C-11	Packaging Cost for Frozen and Canned Shrimps	343
C-12	Comparative Freight Rates of Marine Products	356
C-13	Export of Dried Marine Products during 1962-63 to 1968-69	362
C-14	Exports of Dried Fish to Ceylon	363
C-15	Exports of Dried Prawns to Hong Kong and Singapore	369
C-16	Exports of Sharkfins and Fishmaws to Hong Kong and Singapore	370
C-17	Disposition of Catch in India	374
C-18	Domestic Consumption of Dried Fishery Products	376
C-19	Domestic Consumption of Shrimp	380
D-1	International Assistance for Indian Fishing Industry	452

List of Annexures

I-A	Sizewise Distribution of Mechanised Fishing Fleet (as on 31-3-1969)	522
I-B	Boat Building Yards (Wooden Boats Construction)	523
I-C	Specifications of 17.5 m Trawlers	534
I-D	Specifications of 60' Mexican Steel Shrimper	547
I-E	Specification of "Storem 8" (Poland) Shrimp and Otter Trawler	563

		Page
I-F	Specifications of TR-27 Stern Trawler (Poland)	578
I-G	Specifications of Cutter HT 311 Sk (GDR) Fishing Vessel	586
I-H	Estimated Requirements of Marine Diesel Engines During Fourth Plan	599
I-I	Specifications of Electronic Equipment	600
II-A	Minimum Hygeinic Requirement for the fishing Boats and the Processing Units/Peeling Sheds	604
II-B	Design for Peeling Shed Prepared by the CIFT	610
II-C	Standards of Quality for Dried Fish	616
II-D	Details of Specification for Fishery Products	622
II-E	Schedule of Deductions for Scored Factors in Respect of Frozen shrimp (ISI Specifications)	632
II-F	Quality Control and Sanitary Regulations in Mexico	634
II-G	Grading Form for Fish, Shell fish, Processing Units, Peeling Sheds	639
II-H	Inspection Procedure for Canned Shrimp from India	643
II-I	Standards for Shrimp (Prawn) imported into Japan	644
II-J	Basis for Continuous Inplant Inspection System	653
III-A	Import Policy for Registered Exporters of Fish and Fish Products	656
III-B	Shipping Facilities Available for Exports of Indian Marine Products	662
IV-A	Collaboration by Chartering of Six Shrimp Trawlers (75') in Economic Unit	671
IV-B	List of Japanese and Other Enterprises under Capital Collaboration	673
IV-C	Fisheries' Joint Venture by Region	676
IV-D	Overseas Investment in Fisheries by Japan	678
IV-E	Joint Venture Operations on the Spot by Type of Fisheries	681
IV-F	Present Status of Shrimp Trawl Fishery in South America	682

3. PROBLEMS OF EXPORT MARKETING

Exports of Indian marine products having increased from Rs 30 million in 1961-62 to nearly Rs 247 million in 1968-69, have registered over 700 per cent absolute rise during the period of less than a decade. Even making allowance for the devaluation of the rupee since June, 1966 the export realization indicates over 400 per cent rise. However, India's share of world trade in these products is barely one per cent at present. With the growing world demand and the potential available in India for augmenting the supply, scope for increased exports appears considerable. It is in this context that the Planning Commission and the Ministry of Food & Agriculture fixed the export target at Rs 450 million to be realised by the end of the Fourth Plan. On the basis of the strategy suggested by this survey, it should be possible to realise much higher targets of exports during the course of the Fourth and Fifth Plans. It is envisaged that with the requisite investments in the infra-structure, the introduction of large fishing vessels and expansion in the processing capacity in different coastal areas of the country, exports of marine products can reach the targets of Rs 609 million by 1973-74 and Rs 1,180 million by 1978-79. This would mean a 146 per cent rise by the end of the Fourth Plan and over 375 per cent further rise by the end of the Fifth Plan. The most important question, therefore, is whether the industry is in a position to meet this challenge successfully. The industry faces several limitations and constraints in the production and processing of raw materials. These aspects have been discussed elsewhere in the survey report. This section is primarily concerned with the problems of export marketing, an aspect which is becoming increasingly important with the entry of several exporters from a number of countries and keen competition in the world trade of marine products.

3.1 Existing Marketing Practices

The bulk of the marine products from India goes to the US market and is sold on consignment basis through agents. With regard to other markets, export firms have established direct contacts with importers or agents in the foreign countries and a large proportion of their exports are effected on the basis of outright sales. Obviously, exporters have no direct contact with the ultimate sellers in the foreign markets, nor do they have their own marketing organisation. Agents and brokers, therefore, do the actual marketing of Indian marine products.

Consignment Vs Outright Sales. In USA which constitutes a major market, exports are mostly undertaken through agents who help the Indian shippers to sell their products on a fixed commission basis. At the time of effecting the actual shipment, the exporter is permitted to draw against a letter of credit about 75 to 85 per cent of the invoice price, determined on the basis of the 'Green Sheet' prices published by the Bureau of Commercial Fisheries, USA, for that day.[2] When the goods are sold, the agent forwards the liquidated statement for the final settlement of the accounts on the basis of the actual prices realised in the market after deducting his commission and other expenses which usually amount to between 10 to 15 per cent.

---

[2] The price quoted in the Green Sheet does not refer to the actual price at which the sales are effected in the market. When hundreds of different varieties and qualities of fish are sold by a large number of merchants and dealers there could not be any single price for a single variety. In fact it is just possible that identical products from the same source of supply may be sold at varying prices each day. What Market News Service of the Bureau of Commercial Fisheries of the Government of USA attempts to do is to collect representative price data relating to different transactions in the important centres of shrimp market and in the light of their past experience draw up a fairly realistic average price for each variety for each day. It is, therefore, intended to serve merely as a guide to exporters, importers and local merchants.

Actual sale of consignment sometimes takes several months and as such in quite a few cases, the final settlement of the account with the exporter is effected after considerable delay. The importers have to meet all the expenses incurred in selling the consignment out of the 15 per cent. These expenses include the interest charged by the bank on the money advanced by the importer for opening the letter of credit in favour of the exporter at the rate of 8½ per cent per annum. Assuming the minimum time lag between the opening of the letter of credit and the actual sale as four months, the interest charge works out to 2¾ per cent of the value of the consignment. Transportation charge from wharf to warehouse is estimated at 2½ per cent and repacking of damaged cartons can be put on an average at 2 per cent. The importers' commission varying from 5 to 7½ per cent is added to these expenses, and, therefore, the amount to be debited to exporters' account comes to 14½ per cent, leaving practically nothing to be paid back to the exporter at the conclusion of the sale. In the circumstances, if there is a decline in the market prices, the consignment would realise a lower price than what was expected at the time of shipments, and the exporter would receive a debit note from the importer. On the other hand, if the price go up, the consignment would realise a higher value, which would cover all the expenses of the importer including his commission and leave some credit balance for the exporter.

Generally, the Indian exporters do not take into account the various items of expenditure the importers have to incur excepting the commission of 5 to 7½ per cent, and consequently expect a credit note in their favour to the extent of 95 to 92½ per cent after the sales are concluded. This inevitably leaves a tendency on the part of the importers to understate the sales realisations for the Indian shrimps than what are actually realised in the market.

In the direct sale or outright purchase method, the sale price is agreed between the Indian processor and the importer before the actual shipment takes place. This reduces the uncertainty regarding the realisation of earnings, facilitates raw material purchase and careful evaluation of the profitability involved in the whole transaction. In the consignment method, there exists a great deal of uncertainty regarding the profitability of the transaction as the actual price at which the goods would be sold depends upon the prevailing price of the day, the agent actually sells them. A time lag of about two months is involved during which the prices may fluctuate. Raw materials on the other hand, were purchased a long time ahead on the basis of the 'Green Sheet' price prevailing then. If the 'Green Sheet' price goes up during the time lag, the consignment system turns out to be advantageous to the processor, for under the direct sale method he would have realised only the fixed price agreed to earlier. If the sale price shows a downward movement, then the consignment method means uncertainty regarding the actual realisations by the exporters.

Role of Agents. Exporters have got accustomed to the practice of having agents who have considerably lightened the burden and anxiety of marketing the highly perishable products in distant markets. Some of the agents in the past have given technical know-how and valuable advice and assistance in processing and marketing when the industry was in a nascent stage. Competent and reliable agents with a good selling network would be able to render good service by securing better price for the products. They adopt their own marketing techniques and organise publicity highlighting the quality of Indian products. Quite often the average price secured through them is higher than the 'green sheet' prices. However, it is possible that quite a few of them may lack the necessary experience and adequate selling organisations. They may not have the resources to render satisfactory services to the Indian exporters. Some of them may permit the Indian exporters to draw on letter of credit, a higher percentage of the invoice value against shipment. But on arrival of the goods, they would not hesitate to sell at uneconomical prices since full commission can be charged even though the goods are sold at a loss. Small exporters without long term stake in business may themselves offer to sell the products at price lower than the prevailing market prices and thereby create scope for the agents to exploit the situation. Inexperienced shippers in India without knowledge of the trade, may engage agents who may promise attractive terms to begin with but may ultimately act to their detriment.

Direct Marketing Organisation. It is true that exporters have the discretion of discarding the services of the agents who fail to render service to their satisfaction. But the medium and small category of shippers who have become dependent on the liberal credit advanced by the agents, particularly in the US market, may not always be in a position to use this discretion freely. So long as the growing American market continues to offer steady demand for Indian products, the institution of agents may continue to function with all its merits and limitations. However, over a long period, the conditions in the market are bound to change and the Indian trade and industry shall have to evolve a marketing apparatus of their own for adopting sounder marketing techniques. The shrimp industry in Mexico appears to have passed through such problems and has evolved a system to do direct marketing of its products in the US market. A brief account of the system is given below.

The Mexican Experiment. On the west coast of Mexico which accounts for about 60 per cent of the total shrimp landings of the country, all vessels belong to the cooperatives and the processing of products is done either in cooperative or private plants on an average charge of US$ 175 per tonne. For marketing in USA, all products are handled by the two Government sponsored agencies, namely Ocean Garden Company and Crest Importing Company located at San Diego, California. They receive the products from all the fishery cooperatives under two brand names namely 'Ocean Garden' and 'Crest' with an endorsement that the product is packed by such and such a cooperative. These two marketing organisations have offices in all the principal cities of USA. With regard to the Crest Importing Company, one individual is completely incharge of the sales and is paid annually US $ 15,000 for organising sales through agents and Mexican representatives. Against each shipment the cooperatives are advanced 75 per cent of the value on the basis of average sales price. The balance is settled after effecting actual sales and deducting 7½ per cent commission charged by the marketing company. The National Financing Company, a Government Company for financing external trade, gives guarantee for the Ocean Garden Company and Crest Importing Company to the US banks which advance money at the rate of 9 per cent. South-African Lobster tails are also being sold through an organisation of all packers at fixed prices through their own agents.

Joint Marketing Organisation for Medium and Small Exporters. Such marketing arrangements were studied in detail by the overseas survey team with a view to finding out their utility and suitability in the context of requirements of the Indian trade. On closer examination, it was found that if Indian trade and industry were to set up such organisations they would not be economically viable on account of high cost of storage and transportation in USA. Besides large export firms having established contacts with agents and processors in USA over a fairly long period of time are quite satisfied with the existing arrangement of marketing of their products and, therefore, are in favour of maintaining the status-quo. But the position with regard to medium and small exporters appears to be different. Past experience shows that most of them are not in a position to supply quality product in adequate quantities in uniform grades and satisfactory packing at regular intervals. Besides, the agents in the US market are also not inclined to serve them better since individually they cannot offer substantially large quantities. It would, therefore, be necessary that they should combine their marketing effort by setting up one common organisation in India which can establish contacts with leading importers in the US market. It is through such an organisation that the quality, uniformity of grades and packaging can be improved and by supplying large quantities of goods regularly and on time it can strengthen the bargaining position of this category of exporters vis-a-vis the importers and their agents in the US market.

The medium and small categories of exporters* which include a large proportion of merchant-exporters are responsible for using multiplicity of brand names which are ultimately discarded by the importers in the overseas markets.

---

*The 90 units processing frozen and canned products registered with the Marine Products Export Promotion Council in 1968, responsible for the export of 84 per cent of the total marine products of India can be divided into large, medium and small categories of exporters on the basis of their annual export sales, as indicated below:-

Range	No.
1. Large (Rs 5 million and above)	13
2. Medium (Rs 1 million and above but less than Rs 5 million)	28
3. Small (Below Rs 1 million)	49

For enhancing the image of Indian products, it has to be ensured that the products are sold to the end-consumers under the original brand name. At the same time it would be necessary to reduce the multiplicity of brands by encouraging exports under limited brand names. This can be accomplished through the joint marketing organisation, suggested above, as has been done successfully by Mexico, which exports shrimp under two brand names, namely, 'Crest' and 'Ocean Garden'. South Africa has also popularised only one brand for export of lobster tails in the US market.

3.2. Competition

Inter-se Competition. Competition in the marketing of marine products emanates from two distinct sources, internal and external. The latter is inevitable but the former can be minimised if not altogether eliminated. At present there are 168 export firms with 48 freezing units and 42 canning units. Barring the five composite units, the remaining 83 comprise processors with hired or leased facilities and merchant exporters. As mentioned earlier in this study, the entry of these units without their own processing facilities is largely on account of the buoyancy in the export market and the availability of large idle capacities with the firms owning the processing plants. Several of these entrants disappear from the scene when the export market becomes sluggish. Till then, however, they offer competition to the established firms in procurement of raw materials. Since the units owning processing capacities do not possess adequate number of boats* to meet fully their raw material requirement, they buy raw material from the market. The inadequacy of raw materials to meet the requirements of the processing capacity of the industry and the existence of a large number of competitors have led to intense competition to acquire whatever raw material is available and consequently the high raw material prices. As discussed in the earlier chapter the size of the catch per small fishing boat operating in the inshore waters especially in the Cochin area is reportedly declining and consequently the supply of raw materials has not shown sufficient improvement to hold the prices of raw material back.

Quite a few of the merchant exporters enter the export trade on slender financial resources since they get packing credit from commercial banks on the basis of confirmed export orders. They can also draw liberal amount of sales money against letter of credit opened by the importers as soon as the shipment is effected. This has led to indiscriminate growth of exporters who would be prepared to sell the products at prices lower than the prevailing market prices. They cannot supply uniform quality. When complaints are received from importers they continue to remain in business by changing the brand names. Some of them may even go out of business when complaints become persistent and the market becomes unfavourable. Obviously the activities of such exporters distort the image of Indian products which realise lower prices than the prices obtained by comparable products from other countries. This inevitably affects the export effort of the regular and established firms having a permanent stake in the overseas market.

---

*On an average the processors do not get more than 5 per cent of the requirement from their own boats.

The type of internal competition among Indian export firms as discussed above cannot be viewed as a noval phenomenon, since other developing countries like Mexico and Venezuela have also passed through it in one form or another. Some of the bigger export firms go to the extent of suggesting a ban on the entry of new comers who do not have much stake in the business, except to gain temporary advantage of the market situation. Obviously, such a ban is not feasible proposition. However, in order to minimise the harm done to the industry by the activities of such operators, it would be desirable that organisations like the Sea Foods Exporters' Association of India, and the Marine Products Export Promotion Council should endeavour to evolve a suitable code of conduct and try to establish minimum standards of business ethics to be enforced among its members. There appears very little scope for any governmental action in the matter.

The Pack Out System in Venezuela. In this context, the Venezuelan experiment in having a pack out system among the processors deserves a special mention. During two successive years, 1966 and 1967 when shrimp landings were much lower than what they were in 1965, the prices rose sharply as the processing plants started bidding against one another for the limited supply in an effort to maintain their operations. Under the circumstances, in order to protect themselves against the soaring price of raw shrimp, the principal processors decided to change over to the pack out system on the basis of an agreement amongst them. The agreement provides for payment of raw materials price on the basis of the US price of Mexican Gulf shrimps as published by the Bureau of Commercial Fisheries less deductions of 15 US cents for packing and processing, 5 US cents for freight, 7½ per cent commission, 10 per cent brokerage and 10 per cent processors' profit. The joint action of the processors to control raw material price met with resistance from the trawler fleet. As an off-shoot, some 43 boat owners controlling two-thirds of trawler fleet working in the Gulf of Mexico formed a Company in August 1967 and have been constructing a modern processing plant at Carirubna with an installed capacity of 50,000 pounds of finished shrimp a day. Consequently, once the new plant is in operation, the other processors would be required to have their own supporting fleet or rely on other sources of supply like the lake shrimp. Such vertical integration between the two operations, namely prodction of raw material and processing, also appears inevitable to the Indian situation. In the long run, most Indian processors shall have to have their own dependable sources for supply of raw materials either by owning the boats or by having a permanent arrangement with the operators of trawlers. As a matter of fact, a similar arrangement of buying the raw materials from the trawler operators at an agreed price was tried in 1965 by nine leading processors in India. Unfortunately it met with little success at that time.

External Competition. Just as the seafood industry in India has grown rapidly during the last decade and has been steadily improving its export performance, the industry in other maritime countries has also been expanding and thereby creating its own impact in the overseas market. For instance, till recently there were only a few countries which exported shrimp to the US market. Today situation has changed with as many as 60 countries competing in the field. The US market is the largest one for Indian shrimp (frozen and canned) and lobsters. Import of shrimp from India to this market constituted 11.68 per cent in terms of quantity in 1968. However, Indian products are likely to face more competition in the years to come. A clearer picture of the competition that the Indian shrimps have to fa is provided in Table C-1 which gives the share of major sources of supply in the total imports of shrimp in the US market.

The total imports of shrimp (of all types) in the US market increased by 50 per cent between 1961 and 1968. Mexico continues to be the major exporter though its share has gone down from 62.75 per cent to 31.64 per cent over this period. Even in absolute terms the quantity exported has gone down by 24 per cent. However, Mexico still continues to be the major supplier in the US market and, therefore, the chief competitor of India. The Indian share to the US market has gone up from 2.55 per cent in 1961 to 11.68 per cent in 1968 and the quantity exported has increased from

Table 8-1

Imports of Shrimps into USA (1961-1968) 1/

Qty: Tonnes

Source	1961		1962		1963		1964		1965		1966		1967		1968	
	Qty	Percentage	Qty	Percentage	Qty	Percentage	Qty	Percentage	Qty	Percentage	Qty	Percentage	Qty	Percentage	Qty	Percentage
Mexico	35,916	62.75	35,230	54.97	34,706	50.49	32,714	46.65	27,187	36.78	31,169	37.56	31,960	37.87	27,192	31.64
India	1,461	2.55	2,547	3.97	4,512	6.56	4,641	6.61	6,487	8.78	7,484	9.02	8,362	9.91	10,039	11.68
Panama	4,487	7.83	4,589	7.15	4,653	6.76	5,498	7.84	4,656	6.30	4,415	5.32	5,047	5.98	4,867	5.66
Guyana	1,590	2.77	1,872	2.91	2,499	33.63	2,486	3.54	3,616	4.89	5,983	7.21	4,287	5.08	3,787	4.41
Ecuador	2,125	3.71	2,325	3.62	2,554	3.76	2,612	3.72	2,376	3.21	2,571	3.10	2,715	3.22	2,853	3.32
Venezuela	1,120	1.95	2,876	4.48	2,626	3.82	3,585	5.17	5,769	7.81	1,307	1.57	2,165	2.57	2,451	2.86
Pakistan	765	1.33	1,431	2.23	1,673	2.43	2,183	3.11	2,967	4.01	3,716	4.48	3,382	4.01	2,484	2.39
Elsalvador	3,671	6.40	3,246	5.06	3,025	4.40	2,855	4.07	2,439	3.30	3,154	3.80	3,050	3.61	2,105	2.45
Japan	827	1.44	1,779	2.77	1,852	2.69	1,311	1.86	1,136	1.54	1,198	1.44	424	0.50	627	0.73
Others	5,313	9.27	8,238	12.84	10,632	15.46	12,220	17.42	17,277	23.38	21,992	26.58	23,008	27.26	29,531	34.36
Total	57,275	100.00	64,131	100.00	68,732	100.00	70,115	100.00	73,910	100.00	82,989	100.00	84,400	100.00	85,936	100.00

1/ Source: Report of the Indian Seafood Delegation 1968.

1,461 tonnes to 10,039 tonnes. Other countries which have improved their positions over these years are Guyana, Venezuela and Pakistan. The market share of Panama and Ecuador has gone down since the increase in the quantity supplied is only marginal. With regard to Japan and El Salvador the exports affected to this market have gone down in absolute terms.

The imports shown under other countries have gone up from 9.27 per cent in 1961, to 34.36 per cent in 1968. They are together responsible for over 35 per cent of the total shrimp imported into USA in 1968. Some of the Latin American countries like Guatemala, Colombia, Brazil,Nicaragua and the Persian Gulf countries like UAR, Saudi Arabia and Kuwait have been making considerable headway in exports of this item. They are likely to offer increasing competition to Indian exporters in the years to come.

Japan is the second largest and rapidly growing market for Indian shrimp. It is also a highly competitive one, as can be seen from Table C-2 which identifies the principal sources of imports of shrimp into Japan.

Table C-2

Imports of Shrimp into Japan[2/]

(Qty: Tonnes)

Country	1965		1966		1967		1968	
	Qty	Percentage	Qty	Percentage	Qty	Percentage	Qty	Percentage
South Korea	1,003	4.77	1,032	2.28	1,401	3.15	1,806	5.13
China (Mainland)	5,875	27.96	11,769	32.55	5,004	11.25	3,769	10.71
China (Taiwan)	183	0.87	378	1.05	759	1.71	853	2.42
Hong Kong	2,579	12.27	3,170	8.78	3,002	6.75	3,628	10.31
Thailand	1,975	9.40	3,690	10.21	5,090	11.45	4,581	13.01
India	850	4.05	993	2.75	2,147	4.83	3,164	8.99
Pakistan	206	0.98	250	0.69	1,200	2.70	1,635	4.64
USSR	1,632	7.77	6,518	18.03	9,836	22.12	1,419	4.03
Mexico	5,210	24.80	4,889	13.52	7,995	17.98	5,769	16.39
Australia	563	2.68	685	1.89	966	2.17	925	2.63
Others	935	4.45	2,782	7.69	7,066	15.89	7,655	21.74
	21,011	100.00	36,156	100.00	44,466	100.00	35,204	100.00

The eight major suppliers of shrimp to the Japanese market in order of importance are Mexico, Thailand, China (Mainland), Hong Kong, India, South Korea, Pakistan and USSR. The total imports of this market went up by 66 per

---

[2/] Source: Report of the Indian Seafood Delegation, 1968.

cent in 1968 from the level of 1965. Mexico is the top supplier with 16.39 per cent share in the total imports. However, its proportionate share has gone down as compared with 24.80 per cent in 1965. India's share has gone up from 4.05 per cent in 1965 to 8.99 per cent in 1968. Its chief competitors besides Mexico, are South Korea, China (Taiwan), Hong Kong, Thailand and Pakistan, which steadily increased their share of the market by supplying increasing quantities of shrimp.

USSR, which was a leading supplier in 1967 has receded into background by supplying only a small quantity in 1968. The shrimps exported from this country are very small in size and hence not popular in Japan but are acceptable in USA and are therefore re-exported to USA in frozen (P & D) form. USSR has now through Japan come into the field of limited number of countries exporting small sizes of shrimps to US market. The imports from China (Mainland) have been steadily declining. The imports of shrimp shown against Australia are mostly brought by Japanese vessels operating off Australian coast, either on their own or in collaboration with Australian firms. With the increase in catching of shrimp through joint ventures and expansion of the Australian fleet, the export of Indian products to Australia has come down. In fact, Australia has become an exporter of shrimps.

In meeting competition, particularly in the US and the Japanese markets, the Indian exporters suffer from several disabilities* as indicated below:

> Finance and other assistance. In a number of maritime countries direct and indirect assistance in the form of loans and grants are provided to buy fishing vessels and help in the growth of processing units. Special credit institutions providing exclusive credit for the fishing industry have also been set up in several countries. Besides, in many countries and specially in UK the direct and indirect taxation of the industry is kept to the minimum. In contrast to this, the Indian industry does not get financial assistance on such a liberal scale. As mentioned elsewhere in this report, taxes such as excise on fuel, purchase tax on raw materials and import restrictions put the Indian industry at a relative disadvantage.
>
> Quality and image of the product. Other major handicaps suffered by Indian export firms relate to the quality and grade of the products and consistency of supply. Some of the Indian exporters are unable to keep quality and grade required by US consumers. Lack of adequate supply of raw materials required for definite grades is responsible for this. Quite a few exporters do not use any brand name and the importers exploit the situation by using their own brands with the result Indian products lose their identity in the market. Very limited attempts are made by the small scale exporters of the Indian industry at present to improve the quality and grade by introducing innovations in the production technique and exercising selectivity in the purchase of raw materials.
>
> Packing. Packing material used by the seafood industry in India is relatively poor and is found to be inferior compared to that of the competitors. Besides, Indian exporters do not use internationally accepted sizes of the cans for shrimps. Labelling is also found at times to be defective. The size

---

* These are discussed in greater detail in relevant sections of the study elsewhere.

and weight of the master cartons are also not convenient from the point of view of the importers. This matter is further discussed in detail in the subsequent portion of this section.

Marketing practices. As mentioned earlier India's principal competitor Mexico and other emergent competitors like South Africa have adopted direct marketing of the products by setting up their own organisations in the importing countries. They deal in large and selected grades in one or two brands only. These organisations being directly in touch with the market conditions are in a better position to take timely advantage of the market demand. They have the first hand information about channels of distribution and consumer preference. In contrast Indian exporters, who sell on the consignment basis through the importers, are at a disadvantage in the US market.

Shipping facilities. For perishable items like marine products timely and speedier transportation services play a vital role in the export marketing. Mexico and Latin American countries, China (Mainland), China (Taiwan) and South Korea have a distinct advantage of the short distances involved in reaching the US and Japanese markets. Shipping services are more frequent and quick on account of shorter voyage time. Consequently importers can get steady supplies in required quantity according to the fluctuating needs of the market. In contrast supplies from India have to be necessarily in bulk on account of longer voyage time, and lower frequency of sailings by shipping lines. Therefore the importers as well as exporters have to run greater risk in a fluctuating market. On account of these factors, it is natural that importers generally prefer supplies from countries nearer their home markets.

3.3 Need for Diversification: Markets and Products

Competition of Trade. The major items in the export of marine products from India are shrimp (frozen, canned and dried), frozen lobster tails and froglegs, dried fish, sharkfins and fishmaws, constituting over 99 per cent during the last six years as indicated in Table C-3 Exports of items like fish and prawn pickles, frozen fish, beche-de-mer, cuttle fish bones, tortoise shell, shrimp powder, turtle meat and fish oil were of limited order:

Table C-3

Exports of Marine Products from India by Item[3/]

(Percentage in terms of value)

Item	1963-64	1964-65	1965-66	1966-67	1967-68	1968-69
Frozen Shrimp	37.7	50.5	61.8	64.3	67.6	73.0
Canned Shrimp	11.1	9.6	13.9	15.6	13.8	10.3
Dried Fish	24.8	20.9	9.0	8.8	6.0	5.7
Frozen Lobster tails	0.6	1.0	1.7	1.0	1.8	3.7
Frozen Froglegs	4.5	2.6	4.1	4.7	3.2	2.6
Dried Shrimp	15.3	11.4	6.5	3.6	5.3	2.4
Sharkfins & fishmaws	5.7	3.7	2.4	1.2	2.0	1.7
Others	0.3	0.3	0.6	0.8	0.3	0.6
Total	100.0	100.0	100.0	100.0	100.0	100.0

3/ Source: Marine Products Export Promotion Council, Ernakulam.

The share of frozen shrimp has gone up from 37.7 per cent to 73.0 per cent and that of frozen lobster tails from 0.6 per cent to 3.7 per cent over the last six years, whereas the share of dried fish and sharkfins & fishmaws has steadily declined from 30.5 per cent to 7.4 per cent. Similarly dried shrimp has suffered a setback in its share from 15.3 per cent to 2.4 per cent. Again shrimp and froglegs, after registering some increase during the intervening period, have shown a declining trend over this period. Shrimp in all forms has acquired a prominent place with a share of 85.7 per cent of the total trade of marine products in 1968-69.

Direction of Trade. In 1960, Ceylon provided the largest market accounting for 63 per cent of the quantity and 50 per cent of the value of total Indian exports. Burma, USA and Singapore followed in that order. This market concentration reflected the dominance of dried fish for which Ceylon, Burma and Singapore were the major markets. The growth of frozen and canned products especially shrimps, lobsters and froglegs, however has changed the pattern of trade since then. In 1969, USA provided the largest outlet for Indian exports with 55 per cent of the quantity and 54.8 per cent of the value of marine product exports.

Japan, which did not figure at all as a market in 1960, has now become the second largest importer with 28 per cent of the value of exports. Other new markets have been France and Australia. Ceylon's share has rapidly declined to 13.5 and 3.3 per cent in terms of quantity and value of exports respectively. That its share in value is considerably smaller than in quantity reflects the low unit value realisation of dried fish exports.

The distribution and direction of major items of exports of marine products in various markets during the past six years are indicated in Table C-4.

Table C-4

Exports of Marine Products from India During 1964-65 to 1968-69 1/
(Destination-wise)

(Percentage in terms of value)

Item	1964-65 Country	1964-65 Percentage	1965-66 Country	1965-66 Percentage	1966-67 Country	1966-67 Percentage	1967-68 Country	1967-68 Percentage	1968-69 Country	1968-69 Percentage
Shrimp/prawn, frozen	U.S.A.	72	U.S.A.	78	U.S.A.	79	U.S.A.	53	U.S.A.	68
	Japan	19	Japan	11	Japan	13	Japan	41	Japan	28
	Australia	8	Australia	9	Australia	6	Australia	5	Australia	03
	*Svt.	1	Svt.	1	Svt.	2	Svt.	1	Svt.	01
Lobstertails, frozen	U.S.A.	99½	U.S.A.	99½	U.S.A.	100	U.S.A.	100	U.S.A.	99½
	Svt.	½	Svt.	½						
Frogleg frozen	U.S.A.	65	France	52	U.S.A.	55	U.S.A.	64	U.S.A.	42
	France	34	U.S.A.	47	France	34	France	27	France	34
	Svt.	1	Svt.	1	Belgium	8	Svt.	9	Belgium	21
					Svt.	3			Svt.	03
Shrimp/prawn, canned	U.S.A.	57	U.S.A.	35	U.S.A.	37	U.S.A.	31	U.S.A.	37
	France	7	France	29	U.K.	29	U.K.	26	U.K.	28
	Denmark	6	U.K.	19	France	20	France	22	France	18
	E. Germany	5	Sweden	4	E. Germany	3	Italy	3	W. Germany	04
	Canada	4	Denmark	3	Sweden	2	E. Germany	3	Switzerland	03
	Svt.	21	Svt.	10	W. Germany	1	Australia	3	Australia	02
					Italy	1	W. Germany	22	Svt.	08
					Netherlands	1	Netherlands	2		
					Australia	1	Svt.	8		
					Svt.	5				
Fish, dried	Ceylon	96	Ceylon	95	Ceylon	97	Ceylon	94	Ceylon	93
	Mauritius	2	Mauritius	3	Mauritius	2	Mauritius	4	Mauritius	05
	Svt.	2	Svt.	2	Svt.	1	Svt.	2	Svt.	02
Shrimp/prawn, dried	Burma	47	Burma	35	Hong Kong	59	Hong Kong	60	Hong Kong	58
	Ceylon	17	Hong Kong	21	Singapore	7	Ceylon	9	U.K.	08
	Hong Kong	15	Ceylon	15	U.S.A.	5	U.S.A.	6	Singapore	07
	Singapore	4	Mauritius	4	Mauritius	4	Singapore	5	Hawai	04
	Svt.	17	Singapore	2	Malaysia	4	U.K.	4	Netherlands	03
			Svt.	23	Ceylon	2			Svt.	20
					Svt.	19				
Sharkfins and fishmaws	Malaysia	54	U.K.	47	Singapore	45	Singapore	49	Singapore	53
	U.K.	25	Malaysia	46	U.K.	30	U.K.	30	Hong Kong	25
	Hong Kong	15	Hong Kong	7	Hong Kong	24	Hong Kong	19	U.K.	21
	Svt.	6	Svt.	-	Svt.	1	Svt.	2	Svt.	01

* Svt. = Small Value Transaction

1/ Source: Marine Products Export Promotion Council, Ernakulam.

Markets for frozen shrimp include USA, Japan and Australia which together account for almost all the Indian exports. The most valuable development in the recent years has been a rapid increase in the share of Japan from 11 per cent of the value of frozen shrimps in 1965-66 to 41 per cent in 1967-68 and a resulting decline in the US share from 78 to 53 per cent. However during 1968-69 the share of US market went up to 68 per cent and that of Japan declined to 28 per cent. This shift towards Japan has been due to several reasons. Japanese demand has been increasing at a very rapid rate for selected grades as has been noted earlier. There is a better price realisation with Japan offering up to 5 cents more per lb., than the US market for the same variety. The 10 to 15 per cent commission and handling charges to be paid to agents and the consignment method of purchase in the USA as against the direct sale method in Japan make Japanese market price even more attractive. The prices of the larger counts which Japan prefers to import have not fluctuated downward over the years and have been continuously going up. The freight to Japan has been considerably lower than to USA improving the realisation of the exporter*.

---

*In 1967-68 for example, the freight to USA was 58 paise per pound as against 37 paise to Japan - a difference of 34 per cent.

Exports of frozen lobster tails are directed mostly to USA whereas frozen froglegs flow to USA and France. The relative share of France which was steadily going up till 1965-66 has shown a declining trend during the subsequent years, owing to the introduction of stricter bacteriological tests in France on the one hand and the closure of the Suez Canal on the other. Since 1968-69, however, exports to France have improved as the problems of quality have been resolved.

USA still constitutes an important market for canned shrimps though its relative share in the total exports has gone down considerably over the last 6 years. Canada which was the second largest market for these products has virtually disappeared from the scene. Higher cost of production, problems of packaging, especially the type of can used, and the loss of material due to non-availability of 4½ oz. cans have held back Indian exports. However, the position in UK has improved over the recent years. USA, UK and France together accounted for 83 per cent of canned shrimp during 1968-69 and countries like Italy, East Germany, West Germany, Switzerland, Australia and Netherlands have since acquired some importance.

For dried fish, Ceylon has consistently occupied the most important place for India. With only 5 per cent share in the total exports, Mauritius is the second largest importer of dried fish. The loss of Indonesian market sometime back for this product is attributed to the ban on imports for protecting the local fishing industry. With regard to the dried prawns Hong Kong has emerged as the most important market recently though Burma held that position till 1965-66. On account of the foreign exchange difficulties and regulations, Burma has entered into a barter deal with Pakistan for exchange of rice with dried fish, leaving restricted scope for the export of Indian dried prawns. Ceylon, USA, Singapore, and UK are the other markets of some importance for dried prawns. The intake of Singapore, UK and Hong Kong together amounted to 99 per cent of the exports of sharkfins and fishmaws in 1968-69. Malaysia which used to hold top position in the past has ceased to import these items from India, again because of the trade agreements reached with other countries.

Share of important markets for the most promising items viz. frozen and canned shrimp, frozen lobster tails and froglegs constituting 90 per cent of the total exports of marine products during 1968-69 is indicated below:

Table C-5

Share of Major Markets in Exports of Marine Products from India 5/

(in percentages)

Product	USA	Japan	France	UK	Total
Frozen shrimps	68	28	-	-	96
Frozen lobster tails	100	-	-	-	100
Frozen froglegs	42	-	34	-	76
Canned shrimps	37	-	18	28	83

The bulk of the marine product exports are at present confined to four products and four markets. These markets have brought forth a steady demand for these products. At the same time they also attract a large number of supplying countries other than India. As was noted earlier, competition in both the US and the Japanese markets has been intense. Diversification of markets and products should in the long run be of interest to the Indian industry.

New Markets and New Products. The possible diversification o our trade in marine products can be in terms of finding new markets for the existing products and to develop new products to meet the existing demand in foreign markets and to explore markets for new products. For example, Canada offers a good market for frozen shrimp. At present main suppliers are USA, Hong Kong, Cuba, Mexico, Japan and a few Latin American countries. Sporadic consignments of Indian shrimp were made through US brokers in the past. There were complaints about the quality of the products

---

5/ Source: Marine Products Export Promotion Council, Ernakula since the consignments were made by assortment of inferior material collected from several shipments effected to the US market and repacked by the US brokers. Therefore, if the Indian exporters establish direct contact with the importers in Canada and supply quality products consistently and in good quantity, the scope for exports of Indian shrimp appears to be quite considerable. For the same reasons, Indian canned shrimps which figured in the imports of Canada at one time, are not moving at all to this market at present. Similarly efforts shall have to be made to send increasing quantities of frozen and canned shrimps and frozen lobster tails and frozen froglegs to UK, France, Denmark, Sweden, Norway, West Germany and other continental countries.

At present, Ceylon constitutes the largest market for Indian dried fish and it would not be possible to depend on this market for a long time, since imports are channelised through the centralised governmental agencies with some quota restrictions. The future intake of Indian products would depend upon the policy of the Government of Ceylon and the trade agreements between the two countries. It is, therefore, necessary to exploit the markets in East Africa, Singapore, Hong Kong and Malaysia.

In the US market the demand for IQF and breaded shrimp is quite considerable which is being taken advantage of by Mexico and Latin American countries. It is necessary, therefore, that India makes a beginning in the supply of these items to this market. Similarly there is considerable scope for exporting head-on whole shrimp both large and small, after boiling and freezing to Spain and Scandinavian countries. The deep sea shrimp and lobsters located recently should find a good market in Scandinavia, in view of its similarily to Greenland's and Danish shrimp.

Export of frozen fish from India at the moment is very negligible. A beginning has to be made in the export of this item with particular reference to tuna, pomfret, dara, shell fish, sardines, ribbon fish, puffer fish, squids and octopus. New canned products which can find an export market are sardines, tuna, smoked eel in oil, canned crab, and crab meat. Besides, the ribbon fish in dried form and laminated Bombay duck, cuttle fish (rings) and fish flakes have also considerable scope for exports. Exports of clams, oyster and cuttle fish products will have also to be organised. The prospective markets for these items are

Fish and Fishery Products	Country
Dara and ghol (frozen)	Singapore
Bombay duck (laminated and dried) and dara (frozen)	East African countries
Pomfret, breams, perches, skipjack, ribbon fish, puffer fish, jelly fish, cuttle fish (frozen), seaweeds & miscellaneous fish	Japan
Bombay duck (dried and laminated), fillets of pomfret, crab meat, small cooked and peeled prawns (100-200 counts), white bait & sardines (canned)	UK
Pomfret, shell fish and clams and crab meat	France
Clams, whole shrimp (boiled and frozen) and crab meat	Spain
Smoked eel, turtle meat and crab meat	Germany
Smoked eel, whole shrimp (boiled and frozen) and canned shrimp	Denmark
Canned sardine, Bombay duck (dried) and canned mackerel	Poland
Seer fish, pomfret, perches, crab meat, shrimp and deep sea lobsters (frozen)	Scandinavian Countries

3.4 Export Price and Unit Value Realisation

The value realised for a unit of export of Indian marine products during the last 9 years is indicated overleaf. The position with regard to shrimps (frozen, canned and dried) is shown separately.

Table C-6

Unit Value Realisation of Exports of Marine Products from India

Year	Quantity ('000 Kg)	Value ('000 Rs)	Unit Value per kg. (Rs)	Quantity ('000 Kg)	Value ('000 Rs)	Unit Value per Kg (Rs)
1960	16,337	40,216	2.46	4,991	16,588	3.32
1961	17,297	41,318	2.30	6,795	24,298	3.57
1962	11,619	37,474	3.23	6,276	26,323	4.19
1963	17,908	58,646	3.27	8,007	38,105	4.75
1964	21,458	68,489	3.19	9,953	47,504	4.77
1965	15,458	69,237	4.48	9,878	56,375	5.70
1966	19,153	135,246	7.06*(5.56)	11,470	112,720	9.82*(7.73)
1967	21,746	199,286	9.16*(5.02)	14,913	170,012	11.40*(7.24)
1968	24,810	220,846	8.90*(5.65)	18,046	189,755	10.51*(6.68)
1969	30,584	330,731	10.81*(6.87)	23,937	289,889	12.11*(7.69)

£ 5/ : Source: Marine Products Export Promotion Council, Ernakulam.

It is clear from Table C-6 that there has been a progressive improvement in the unit value realisation of these products between 1960 and 1968. The substantial improvement visible from 1966 onwards is partly attributable to the devaluation of the Rupee. Table C-7-10 give the price obtained by important items of marine products of India in the US market during the month of September, 1969 and the comparative prices secured by some of the competing countries.

Table C-7

Representative Wholesale Prices of Frozen Shrimp (Headless Shell-on White) in the US Market 7/ (September, 1969) (Monthly Average)

(US Cents per Pound)

Counts	Mexico	Panama	Ecuador	India & Pakistan	Malaysia
Under 10		188.2	188.2		
Under 15		162.6	162.6	151.1	150.0
16/20	174.0	163.6	163.6	146.9	145.9
21/25	158.0	147.8	147.8	133.1	133.9
26/30	148.0	136.9	136.9	120.0	120.0
31/35	130.0	122.2	122.2		
36/40	123.0	112.4	112.2		
41/50	107.0	99.1	99.1		
51/60		85.7	85.7		

7/ Source: "Green Sheet" published by Bureau of Commercial Fisheries, Department of Interior, Government of USA.

Table C-8

Representative Wholesale Prices of Frozen Shrimp (Peeled and Deveined - IQF) in the U.S. Market 8/ (September, 1969) (Monthly Average)

(Price US Cents per pound)

Counts	Ecuador	Mexico	India (Block)	Pakistan (Block)
Under 10	215.0			
Under 15	206.6	215.0		
16/20	215.0	212.5	162.2	
21/25	176.7	200.5	153.1	
26/30	163.3	173.6	142.6	
31/35	145.0	149.2	131.0	
36/40	130.0	143.7	119.2	
41/50	115.0	137.0	112.7	
51/60		132.0	104.9	
61/70			98.4	95.0
71/90			85.5	83.3
91/110			79.9	79.0
111/130			76.9	57.0
130/200			64.6	62.0
'Titi'			54.1	

Table C-9

Representative Wholesale Prices of Frozen Froglegs (Skinned) in the U.S. Market 9/ (September, 1969) (Monthly Average)

(Price US Cents per Pound)

Country of origin	Grades		
	Jumbo	Large	Medium
India	117.5	117.5	122.5
Japan	135	142.5	149.4

Jumbo: 2-4 pairs per pound; Large: 4-6 pairs per pound; Medium 6-8 pairs per pound.

8/ & 9/ Source: "Green Sheet" published by Bureau of Commercial Fisheries. Department of Interior, Government of USA.

Table C-10

Representative Wholesale Prices of Frozen Lobster Tails (Spiny) in the U.S. Market 10/
(September, 1969) (Monthly Average)

(Price US Cents per pound)

Country of origin	1-2 oz.	2-4 oz.	4-6 oz.	6-8 oz.	8-10 oz.	10-12 oz.	12-16 oz.
Australia	-	-	339.2	305.0	305.0	305.0	300.0
Japan (Red)	-	-	218.1	218.1	218.1	-	-
Brazil	-	178.1	247.5	246.9	239.4	-	-
India and Pakistan	110	154.4	228.1	228.1	228.1	-	-

From this illustrative data, it is clear that the prices realised by Indian products for comparable grades are lower than those of competing countries in the US market. The reasons for such a state of affairs are discussed below:

IQF vs Blocks. Countries like Mexico, Panama, Brazil, Ecuador obtain higher price as their exports of shrimps are mostly in IQF form rather than the block form in which India is exporting. The major proportion of the headless shrimp and prawns supplied by India are sold to processors, who convert them into P & D head-on or head-off and prepare IQF products in consumer packs. Thus the identification of the

---

10/ Source: "Green Sheet" published by Bureau of Commercial Fisheries, Department of Interior, Government of USA.

product (brand name) and the country of origin are lost. Benefit of the higher prices realised, 35-50 cents per lb., by the IQF products goes to the processors. Besides the exporters in India incur expenditure on waxed and master cartons used for packing and additional freight for shell, all of which are discarded by the US processors who re-process the products.

Whether India could successfully process IQF, butterfly, breaded-shrimps and other ready-to-cook varieties for better price realisation depends upon the availability of required processing machinery, equipment and packaging materials, most of which will have to be imported. As mentioned elsewhere in this report, attempts to process IQF shrimps with the existing plate freezers have been found uneconomical due to the excessive time and labour required. It is essential to allow import of these items of machinery for a period of 5-10 years.

Lower realisation for smaller sizes. Unlike other supplier to US market India and Pakistan export a large proportion of smaller varieties of shrimp which fetch lower prices as indicated above. The varieties are generally used for production of convenient foods like soup, shrimps rolls etc. There is a good demand for smaller sizes upto 500 counts per lb. and India is one of the very few countries exporting this grade. However, on account of defective grading and variable quality, the importers as well as wholesalers in the US market are not inclined to keep large stocks and run the extra risk. Besides, this has an inevitable effect on the price realization.

US importers are of unanimous opinion that counts smaller than 500 per lb. should not be exported and that too on the grade designation of 131 up. When grading is done as 131 up P&D, although no upper limit is shown, no country other than India supplies a count of more than 250 per lb. This limit having become the convention, US buyer expects nothing beyond this. But the Indian suppliers have been sending consignments with counts upto 1,400 per lb under this grade, even though the inspection certificate accompanying shipment does not mention a very low count as per existing needs. This is considered to be one of the reasons for the sudden drop in the price of 131 up grade in the US market in 1967. It is suggested by the US importers that intermediate grades like 131-200, 201-300 and 300-500 should be adopted for the US market. Sizes above 500 count should not be exported, but can be used for convenience.packs.

Faulty grading practice. Indian exporters of frozen shrimps do the grading of the end-products on 'finished count basis', instead of grading them according to the size of grade of the original raw shell-on-shrimps. This causes the shrimps to become a grade smaller for sales purposes thus bringing the shippers the price of the next lower grade which is about 15 cents less per lb. Most of this type of shrimp purchased in USA has been used by repackers, who have been thawing and repacking it according to the correct size and thereby picking up a gain of 15 cents per pound by merely repacking or sometimes only by renumbering the grade. This error in packing has meant considerable loss of foreign exchange to the country.

Lack of direct marketing channel. If the large shippers in India process and pack products in the form ultimately consumed in US market, they can in course of time eliminate the brokers especially those whose contribution to market intelligence, technical improvement and increase in price is limited, by supplying directly to large distributors and processors and thus realise a higher return on their products. There are a number of firms in USA having their own research and development departments, which can render valuable services to the Indian Seafood Industry in the techniques of processing and packaging on the basis of their vast experience in the US market. In Mexico the shrimp industry passed through many such phases, before it could finally stablise its position by channeling all exports through one/two well organised agencies. This eliminated mutual competition and price cutting. Consequently the Mexican shrimps today sell for at least 10 cents per lb. more than the shrimps from many other countries. By doing a similar thing, South Africa today earns at least 75 cents to $1 per pound more for the lobster tails as compared to other competing countries; similar steps have been taken by the exporters of Australia and New Zealand.

Defects in the shipments of froglegs and lobster tails.

Indian products are generally found discoloured, wrongly graded and sometimes improperly cleaned as compared to products from Australia, New Zealand and Japan. Consequently even for comparable grades price realization for Indian products is lower. It is suggested by the importers that with the removal of these defects, they would fetch even higher price than those realised by the competitors.

3.5 Packing and Packaging

The type of packing and packaging of marine products adopted by Indian exporters falls considerably short of the requirements of the market and individual preferences of the consumers. This is largely on account of use of substandard packaging material, non-standard sizes of the master cartons and cans, defects in the packing of material, marking and labelling. Besides, the packaging cost also poses a problem for them. These aspects are discussed below:

Sub-standard packaging material. Poor packaging affects adversly the quality of an otherwise good product. This applies to both frozen and canned shrimp exported from India. Master cartons, generally used by Indian exporters are not, in general, of as good a quality as those used by their competitors and cannot withstand the stresses and strains of transit as well as the number of handlings of the product in shipment with the result that they very often arrive at the destination in a damaged condition. Imported material is reported to be not only better in quality but also cheaper in price provided the Indian exporters can place bulk orders. Medium and small scale exporters, unwilling to lock-up their funds in the inventory of the packaging material are at a disadvantage. It is necessary that standards be laid down for cardboard cartons, waxed cartons, cans and labels and other types of packaging used by the exporters and incorporated in the quality control inspection measures, currently in force in the country. This will eventually have the effect of inducing improvements in the quality of indigenous cartons and containers, even if the exporters are not inclined to import them against the entitlement.

Master cartons used by several competitors in the overseas market involve no stapling, the use of which causes rusting and at times infiltration of foreign material into the product. India still packs cartons with staples. It is necessary that cartons are provided with interlocking or glueing arrangements. Polythelene coating is applied in most foreign countries on account of its superior quality for surface brightness and head scalability, thus eliminating the problem of rusting of the staples or opening of interlocking. In India polythelene is available but the problem is of the availability of suitable machinery for application of this material on cartons. Import of such machinery appears to be inevitable for bringing the cartons to international standards. For penetrating the large and lucrative market for IQF shrimps, the overall appearance of the cartons is an important factor determining the prospects for Indian products. These will have to be either imported or fabricated indigenously from imported or superior quality material made in India. Besides, the quality of printing will have to be improved considerably. The outer carton which goes through rough handling generally lacks the requisite strength. The material is not required to conform to any minimum specifications in India, as is done in the western countries. The quality of the Indian craft liners which determines the quality of the box is not satisfactory for conversion into corrugated board with minimum bursting strength of 200 pounds per square inch. This calls for more research by our packaging industry.

In the present import entitlement scheme, there is adequate provision for imports of cartons, but the industry is not able to take full advantage of this facility. The need for placing large orders and the time lag in realising drawback against 110 per cent import duty are some of the factors responsible for the reluctance of the exporters in availing of the benefits of the import entitlement. The customs authorities have by notification restricted imports of craft liners with substance more than 180 grams per square metre. This prevents the convertors from making the 3 ply box with 200 pounds bursting strength, since a minimum substance of 200 to 225 grams per square metre is required. Therefore, this restriction needs modification. Similarly, the provision relating to import of waxed cartons also calls for a suitable change so as to enable packers to import fine quality duplex board for converting within the country till such time improvements in the quality of domestic products take place. The import of these items can be channelled through a special organisation in a phased manner. The elaborate printing of cartons giving brand names, names of the manufacturers or distributors can also be economised by adopting a central design for each brand and grade with appropriate changes in the colour schemes. Besides, it is desirable to print the labels in the language of the consuming country.

Size of Master Cartons. The size of the Indian cartons for the same quantity of contents is relatively smaller in comparison with others. This smallness in size puts the Indian product at a disadvantage in the US market which prefers a slightly bigger packing. The tendency on the part of the exporter to effect marginal savings in freight cost, by reducing the volume of package, thus turns out to his disadvantage. Besides, by compressing the size of the carton, the packing loses shape and is put to greater strain. In many cases the cartons do not retain their original shape. The corners get opened up and the strapping gets loose at the time of handling at ports.

The Japanese importers on the other hand are reluctant to accept 50 pound cartons as they find them too big. The retail market in Japan requires smaller cartons and the preference is for cartons of 30 pounds.

Marking and Labelling. The markings of code number, box number etc., made on the master cartons at the time of shipment are quite often not sufficiently prominent and legible. Sometimes they are even smudged and confusing. Consequently there is delay in the clearance of the consignment necessitating additional expenditure by the importers in checking and restamping which is recovered from the sales proceeds.

Regarding labelling, the importers in USA expect a change in the outlook of Indian packers, specially in view of the law recently enacted in USA, on the correct packing and labelling. The blocks and descriptions given on the labels should be true to the contents. For example, showing a jumbo shrimp or a whole shrimp on a label for broken or tiny shrimp peeled and deveined, is no longer acceptable in the US market and is liable to be rejected by the inspection authorities.

In UK, consumers prefer frozen shrimp with layer packing which would show the product to greater advantage and the market preference is said to be for 1 pound rather than 5 pound cartons generally used by Indian exporters. Marking of the goods in retail packages obtain better price than layer packages generally done by Indian exporters. The advantage in doing so would be that the packages can be straightaway sent to retail shops like department stores or super markets. Whether or not India can export ready-to-eat consumer packs now in vogue in the Western markets, will depend on the specialised equipment required for their processing and its cost and availability in India.

Though the quality of Indian labels has improved over the years, there is scope for further improvements in the quality of indigenous art paper so as to be amenable for higher quality printing. The present policy which permits import of labels, should be continued as most of the foreign buyers insist on the use of their own labels. It is rather anomalous, however, that while labels are allowed to be imported, art paper is not permitted. It is recommended that the Government should allow the import of art paper and institute a proper organisational machinery to ensure that art paper imported under this scheme is used only for bonafide purposes, presumably on the lines of the present nomination schemes for the imported tinplate.

Packing of the different size grades. Sufficient care is generally not exercised by some Indian exporters in the actual packing of frozen shrimps. For example, with regard to the packages of 40-50 counts the consumer buying 5 packets would expect to get about 200 to 250 shrimps approximately, but not over 250. He would get his money's worth only if the packet conforms to the lower end of the scale. There has to be greater uniformity in the size of the shrimps packet, in each carton. Sizes in 15-20 should not get mixed up in a packet of 40-50. The ultimate consumer would face many practical difficulties if the products do not correspond to the description on the package. In the sophisticated markets electrical cooking is universal and the time for cooking would vary according to the size. If different sizes are indiscriminately mixed up, it would affect the time required for cooking. The processors buying the blocks of frozen shrimps imported from India have to sort out the various counts by manual labour, the cost of which is quite high and this extra cost is ultimately passed on to the account of the exporter as handling charges and to that extent the export sales realisation is reduced.

Size and cost of cans. Indian canned products are exported in round cans of four different dimensions. The size most widely used is one of 301 x 206 (8 oz. of fluid cans) dimension and more than 80 per cent of the production is in this type. However, this is not the internationally accepted size for packing of prawn. The most suitable and popular can in packing 4½ oz. prawn in brine is in 307 x 113 dimension. The manufacturer of the cans in India has a virtual monopoly and since the imports are not permitted, the exporters have no choice but to continue to pack excess weight upto half ounce in these cans to meet the requirements of the US Food and Drug Administration. All the countries exporting to USA have the advantage of having the right size of cans for packing 4½ oz. The cost structure of can manufacturer in India has to be carefully studied including the landed cost of tin since economies of scale would prevent a new firm entering this activity. Alternative ways to make available these cans at international price will have to be evaluated. These may include subsidising the processor for compensating the high cost of cans manufactured in India or to permit imports. Another alternative would be to make available to the fabricator the requirement of tin at an international price so as to bring down cost.

In canning of sardines which are available in abundant quantity along the West Coast of India, considerable difficulties are experienced regarding the size and the type of cans. At present packing is done in round A1 tall cans (8oz. fluid) and in flat quarter dingley cans exclusively for domestic market. The three piece rectangular can (402 x 207 x 102) with top soldered and bottom seamed, is the popular can developed by Portugal in the international markets. Non-availability of this can from Indian fabricators is a major handicap for exploiting the export prospects of this item. The fabricator's anxiety for adequate demand for such cans for making the necessary investment in setting up a special manufacturing line economical is understandable. One of the leading fabricators has recently installed an experimental line of machinery for the purpose and has attempted to deliver 10,000 cans on a trial basis*

---

*Report of the Committee on Export Packaging of Processed Foods.

The price of these cans quoted at Rs 440 for thousand cans is quite high as compared, for instance, with the quarter dingley which is available at Rs 296 per thousand. Indeed, the cost would be considerably reduced once production on a commercial scale is undertaken. If the estimated price is made known to the canners based on a sizeable turnover, they could in their turn analyse ultimate cost of processing of can of sardine and place definite orders. If, however, the investment on the special equipment is found to be uneconomic at present, Indian exporters may be permitted to import this can from abroad for facilitating the test marketing of the product. It may be of interest to note that the present trend is for aluminium cans with ring pull type for sardines. These may be allowed to be imported, till they can be manufactured in the country.

Dependence of marine products industry on imported tinpate will have to continue till such time as requisite improvements are brought out in the quality of indigenous **plate** particularly in respect of phosphorus and silicon contents, the safe limit for phosphorus in the base steel used for tinplate for Open Top Sanitary (OTS) cans being 0.020 per cent. Though the Rourkela Steel Plant is reported have produced about 48,000 tonnes in 1969-70, the quality of the plate has yet to be satisfactorily improved. It is also necessary to remove defects such as gauge variations, out-of-squareness, presence of greases on the surface and pinholes.

Packaging cost of frozen and canned products. Packing requirement of the industry include master cartons, waxed cartons, hoop iron, staples, labels and polythene bags. Representative packaging cost for frozen and canned shrimp are shown in the following table:

Table C-11

Packaging Cost for Frozen and Canned Shrimps[11]

Item	Frozen Shrimps (10x5 lb) Rs		Canned Shrimp (24x4 oz cans)
5 lb duplex board printed waxed cartons (10 nos)	3.80 - 4.50	4½ oz (301x206) cans (24 nos)	5.82
		labels (24 nos)	1.20
3-ply master carton	2.00 - 2.30	3-ply outer carton	1.00 - 1.25
5-ply master carton	3.00 - 3.40	5-ply outer carton	1.50 - 1.80
Total (with 3-ply master carton)	5.80 - 6.80	Total (with 3-ply outer carton)	8.02 - 8.27

(Contd...)

---

[11] Source: Report of the Committee on Export Packaging of Processed Food, 1969.

Table C-11 (Contd)

Item	Frozen Shrimps (10x5 lb) Rs		Canned Shrimp (24x4 oz cans)
Less export drawback on 10 waxed cartons	0.53	Less export drawback on 24 cans	1.14
Less export drawback on 3-ply master carton	0.26	Less export drawback on 24 labels	0.09
		Less export drawback on 3-ply outer carton	0.13
Nett packaging cost	5.01 - 6.01	Net packaging cost	6.66 - 6.91
Average f.o.b. value of one case	250	Average f.o.b. value of one case	40
Nett packaging cost as proportion of f.o.b. value	2.0 - 2.4%	Nett packaging cost as proportion of f.o.b. value	16.6 - 17.3%

It can be seen that on an average packing cost ranges from 2 per cent to 2.4 per cent of f.o.b. value for frozen prawn and 16.6 per cent to 17.3 per cent for canned prawn. It would, however, be noted that although certain averages have been assumed for the f.o.b. values, the range of variations is quite wide in that case. The f.o.b. value of frozen shrimps can be between Rs 150 and Rs 400 per case of 50 lbs., while that of canned shrimp ranges from Rs 35 to Rs 60 per case depending upon the grade and the quality.

The packing cost of canned prawn is high in comparison with frozen prawn because of the prohibitive cost of the can. The price of 24 paise per can amounts to 12 per cent (after deducting the drawback) of the f.o.b. value of the product. Obviously the indigenous manufacturers of cans should endeavour to reduce the cost and thereby enable the exporters of canned products to effectively compete in the international market.

3.6 Shipping Facilities and Freight Rates

Adequate and timely availability of shipping facilities at a reasonable cost is an important factor in the marketing of perishable products like frozen marine products. Unlike other items of dry cargo, these products have a special requirement of reefer space and the merchant vessels plying on our trade routes may not necessarily be equipped with it. Besides, these products are treated as an item of general cargo and carried mostly by the vessels of various shipping lines operating as members of Conferences/Freight Agreements, plying on major trade routes of the world. Ordinarily, it is not possible to think in terms of chartering a reefer ship on account of high cost and for want of a full shipload of cargo at a time. Being frozen cargo, loading on board the vessels has to be done at night and, therefore, actual shipment is bound to pose certain problems. On individual trade routes, most of these products move in limited quantities as compared to other items of trade. Obviously, the shipping line would provide limited reefer space, supply of which has to be coordinated according to the requirements of the trade. It is rather expensive to maintain the reefer chambers in the holds of ships and consequently freight rates tend to be higher than those on other items of general cargo.

Existing Shipping Facilities. The pattern of exports of frozen seafoods and dried fishery products from India is being gradually diversified. The principal markets of interest to India are USA, Japan, UK and continental countries. Besides, in the Near and Far-East, countries like Singapore, Indonesia, Thailand, Hong Kong, Philippines and Australia have also assumed importance in our effort to enhance the exports of Indian marine products. Various shipping conferences and lines provide services* to these countries as indicated below:

---

*For details of Shipping facilities see Anneuxre III-B.

United States of America	West Coast of India and Pakistan/USA Conference
	American President Lines Ltd
	Everett Steamship Corporation
	Nedlloyd Hoegh Lines
UK and Continental Countries	India-Pakistan/UK-Continental Conference
	Malabar Coast, UK and Eire Conference
	Malabar Coast/Continental Conference
	Calcutta and Continental Conference
	Madras/Pondicherry/Continental Conference
Japan	Japan/Persian Gulf/Japan Conference
	Bay of Bengal/Japan/Bay of Bengal Conference
Australia	Malabar/Australia Rate Agreement
	Bombay/Australia Rate Agreement
Near East and Far-East Countries	Gulf Arabian Sea/Orient Rate Agreement
	Malabar/Far East Rate Agreement

Services to US Ports. For the US market the West Coast of India and Pakistan/USA Conference provide 10 to 12 sailings per year for US/Atlantic ports. Till a couple of years ago it used to provide about 23 sailings for these ports but on account of the reduction in the availability of cargo other than marine products, the sailings are curtailed. In addition, the American President Lines Ltd provides two to three monthly sailings for Atlantic as well as Pacific Ports. These are round the world voyage services and, therefore, quite often may not always coincide with the requirements of Cochin shippers.

The Everett Steamship Corporation and the Nedlloyd Hoegh Lines provide monthly services from Calcutta to US Pacific Port like Los Angeles, San Francisco, Portland, Seattle, Vancouver, etc.

Services to UK/Continental Ports. The Malabar Coast/ UK and Eire Conference and the Malabar Coast/Continental Conference provides from Cochin on an average three sailings per month to London and Liverpool and four sailings per month to Continental ports like Antewerp, Rotterdam, Hamburg, and Bremen. However, for Mediterranean ports like Marseilles, Le Harve and Dunkirk, there is only one sailing a month and in that too, the space for reefer cargo is provided on the basis of sufficient inducement. The American President Lines formerly used to serve these ports very well. However, on account of increase in the operational cost after the closure of the Suez Canal, it has stopped calling at these ports from January, 1969. The India-Pakistan/UK-continental conference provides 6 to 8 sailings per month, out of which only two sailings are with reefer space, for ports of call in UK, Northern Ireland, Eire, Gibraltar, Greece, Yugoslavia, Italy, France, Belgium, Netherlands, Spain, Portugal, Germany, Denmark, Norway, Sweden and Finland. Indian shippers, therefore, find it very difficult to effect regular shipments to these ports.

The Calcutta Continental Conference and Madras/ Pondicherry/Continental Conference operating from Calcutta and Madras respectively have no fixed number of sailings for reefer cargo. The services are provided according to the requirements of the trade.

Services to Ports in Japan. The Japan/Persian Gulf/Japan Conference provide on an average six to eight sailings per month from Bombay (out of which about 4 sailings can provide reefer space) and three to four sailings per month from Saurashtra and Malabar ports. Ports like Mangalore, Tuticorin, Madras, Pondicherry and Cuddalore are served on the basis of inducement of cargo. The ports of call in Japan are Moji, Kobe, Osaka, Nagoya, Yokahama. The Bay of Bengal/Japan/Bay of Bengal Conference operate through Calcutta and takes reefer cargo for Penang, Port Swettenham, Singapore, Bangkok, Hong Kong and main ports in Japan.

Services to Near East and Far East Countries. The Gulf Arabian Sea/Orient Rate Agreement provides services from Bombay to Straits ports, Djakarta (direct), Bangkok (direct) and Manila for not only refrigerated cargo but also for dried fishery products. Similarly, the Malabar - Far East/ Malabar Rate Agreement provides services from Malabar to straits ports, Hong Kong, Djakarta and ports in Japan. Besides its services touch ports like Cebu, Lloido and Manila in Philippines.

Services to Australian Ports. The Bombay/Australia Rate Agreement provides on an average one to two sailings from the West Coast of Indian ports to main Australian ports like Fremantle, Adelaide, Melbourne, Sydney and Brisbane on direct basis and other ports with transhipment.

The fishing and processing activities of shrimp are largely confined now to the coastal stretch between Mangalore and Cochin which is generally well served by shipping lines, as indicated above by providing services on major trade routes to East and West coasts of USA and Canada, UK-Continent, Persian Gulf countries, Far East, Japan and Australia. In fact one of the reasons for concentration of processing units at Cochin is the availability of a good deal of shipping facilities. However, the export firms in this region at times experience lack of timely availability of sailings and adequacy of reefer space. This is largely on account of difficulties in coordinating the schedules of sailings and the requirements of the trade. Fluctuations in the supply of raw materials make it difficult for the trade to anticipate from time to time definite requirements of sailings and reefer space. Shipping lines have the problem of coordinating the available supply of space for reefer as well as other items of general cargo with the volume of traffic likely to be available from several ports of call on a given route. Consequently, at times ships sail with unutilised space; on other occasions the space available proves insufficient and the number of sailings inadequate. This calls for a cooperative endeavour between trade and shipping interests in assessing the situation from time to time by creating a joint machinery consisting of shipping agents, freight brokers and the representatives of the trade.

During monsoon when the Mangalore port is closed to shipping services, the South Kanara units have to send their products to Cochin in refrigerated trucks supplied by the Mysore Government at considerable cost. Goa and Ratnagiri at present lack shipping facilities for reefer cargo and the processing units in these regions have to send their products all the way to Bombay in coastal vessels or trucks entailing additional effort and cost. Similarly, adequate facilities at Madras and Visakhapatnam have yet to develop. Orissa on the east coast and Saurashtra in Gujarat on the west coast with good fishery resources hold out prospects for the establishment of processing units. However, lack of shipping facilities at Paradeep and Veraval has been one of the important factors inhibiting the development of the industry. Development of all weather ports providing direct berthing facilities synchronising the establishment of processing units and expansion of existing industrial activities in these regions to offer sufficient inducement of traffic to shipping lines appears to be the only long-term solution. During the interim period shipping lines should be persuaded to offer sailings at these ports on selective basis by offering sufficient cargo at least to serve as minimum inducement.

During the peak season the export firms at Cochin often experience shortage of reefer space despite adequate sailings. Cochin port generally does not serve as the base port for most shipping lines because of its locational position. The available reefer space occasionally gets utilised at ports like Calcutta and Madras on the east coast leaving limited opportunities for the shippers at Cochin.

Besides, high rated cargo like shellac usually shipped from Calcutta also competes for space. Closure of the Suez Canal has considerably affected the sailings available for US-Atlantic and Mediterranean ports, on account of the diversion of vessels and the consequent lengthening of the voyage time.

Freight Rate Practices. Majority of Shipping Conferences and lines operating on these routes have not yet formulated specific tariff rates and frozen marine products are accepted as refrigerated cargo n.o.e. (not otherwise enumerated) rates. It is a rather anomalous situation in view of the fact that these items which were initiated in our export trade in 1953 now move regularly on several trade routes of the country.

The rates are quoted separately on the basis of measurement and weight and the shipper has to pay the freight which works out higher. Besides the items moving to UK, continental countries and USA via Atlantic have to bear additional charge of 15 per cent on account of the closure of the Suez route. Conferences like Japan/Persian gulf/Japan and Bombay-Australia Rate Agreement charge a minimum amount per bill of lading issued irrespective of the quantity shipped. Besides, the former has a practice of collecting additional charge for loading cargo from ports like Mangalore, Tuticorin and Cuddalore. West Coast of India and Pakistan/USA Conference have a dual rate system consisting of contract and non-contract rates. The latter are higher than the former. For taking advantage of the contract rates the shippers are under obligation to patronise only conference vessels.

The conferences charge uniform rates for items of frozen sea foods irrespective of their sizes. Size is a very important factor in realisation of price in the export market. As has been indicated earlier the smaller types known as "titi" fetch one third of the price realised by the bigger shrimps with 16/20 count. By and large, it is also true for lobster tails and froglegs. What the traffic can bear is an important principle which shipping conferences have to take into consideration while formulating the specific rates. For a commodity, the capacity to bear the impact of the freight rate depends on the price it can realise in the export market. Therefore, it is not fair to impose uniform rates on these items irrespective of the sizes. There is need to have at least two separate rates for large and small sizes if not multiple rates which would not be a practical proposition.

High Freight Rates. During recent years shipping conferences operating in India's overseas trade have put up freight rates considerably by announcing a general freight rise, a number of times on most commodities including marine products. The devaluation of the Rupee in 1966 and that of Pound Sterling in 1968 also inflated the freight rates in an indirect manner when the shipping conferences wanted compensation for increased expenditure incurred in currencies which were not devalued. Besides, most conferences have levied special diversion surcharge after the closure of the Suez Canal. The totality of all these factors has increased the cost of transportation of marine products along with others.

Shippers of marine products have, therefore, a legitimate grievance about the high freight rates at present ranging between 15 to 25 per cent of f.o.b. value, to be paid on various items of export. This appears to have affected the competitive capacity of Indian products in the overseas market. It is pointed out that Indian shippers pay more by way of freight charges on exports to USA as compared to other competitors. This is reflected by the comparative freight rates indicated in Table 3-12.

Table C-12

Comparative Freight Rates of Marine Products[12]

Route Movement	Items	Freight Rates (US $ per 100 Kg.)
West Coast of India to New York	Frozen shrimps and lobster tails	128
	Froglegs	141
Persian Gulf to New York	Shrimps	108
Australia to New York	Lobster tails	130
Argentina to New York	Shrimps	124.50
Brazil to New York	Lobster tails	140.50
Panama to New York	Shrimps	93.75
Japan to New York	Froglegs	120.00

Excepting for countries like Australia and Brazil, freight rates on Indian products for US market are higher than other countries as indicated above. Physical distance of the supplying countries from the US market is one of the factors that might reflect in the freight rates but it is not very important one, as indicated by rates paid by shippers of Japan and Persian Gulf countries. Substantial part of the freight disadvantage suffered by Indian products would disappear, if the shipping conferences were to formulate specific rates taking into account, the fact that exports of frozen shrimp to this market which was 1,461 tonnes in 1961 has gone up to over 10,000 tonnes in 1968.

---

[12] Source: IIFT Survey Team

The All-India Shippers' Council and various Shippers' Associations in consultation with the Freight Investigation Bureau take up specific cases of anomalous, high and discriminatory freight rates and negotiate with individual shipping conference for necessary adjustments in rates. As a result, on a number of commodities freights have been reduced by obtaining concessions and lower specific rates. This has brought some relief to the trade but it is not adequate enough for increasing the competitive capacity of Indian products. However, with regard to marine products it is claimed by the trade interests that no such concession or reduction in the freight rates has been made available so far. As stated earlier, it is also maintained by the trade that the shipping lines applied a general cargo rate which was very much on the high side to marine products in 1953 when the traffic amounted to only 300 tonnes from Cochin, on the understanding that the rates could be lowered with the increase in traffic. Today the volume of traffic is estimated at over 10,000 tonnes and still the shipping lines do not consider it necessary to cover the rates. In matters like this, when the trade interests do not have the necessary organised strength to match with that of the conferences having more or less exclusive trade rights by virtue of their monopoly on individual trade routes, the solution of the problem depends upon the amount of goodwill the conferences are inclined to show for the promotion of Indian exports. Those of them which are favourably disposed towards the Indian trade cannot go far enough to reduce rates sufficiently to remove the competitive edge enjoyed by the exporters of other countries. Under the circumstances, it would be rather difficult to expect them to quote special freight rates giving a competitive edge to Indian shippers for promoting the exports of these products. The possible solution lies in giving a subsidy in a suitable form to Indian shippers with a view to neutralising at least some proportion of the freight impact. In fact a beginning has already been made by the Government of Maharashtra which gives 33½ per cent subsidy on the freights paid on exports by the cooperative units. This was done with a view to encouraging the exports of filleted pomfrets and laminated Bombay ducks. The Ministry of Foreign Trade in consultation with the Freight

Investigation Bureau of Directorate General of Shipping should examine the question of giving freight subsidy to the exporters of marine products.

Shipment of Frozen Cargo. Lack of coordination between the functions of shipping agents, clearing and forwarding agents, freight brokers, port and customs authorities in effecting shipment of export cargo poses several problems. Frozen cargo is loaded on ships during the specific hours of night at a lower atmospheric temperature and quite often consignments get crowded on the quay. Customs formalities and the examination by the surveyors of the shipping agents become time consuming causing delay in the shipment and thus to some extent on quality. Quite often at ports like Bombay, cargo is brought in open trucks for want of refrigerated vans and delay in shipment results in spoilage and rejection by the ship's master. At ports like Cochin and Bombay where cargo comes from distant places, the need for cold and frozen storage facilities becomes inevitable. These are not available at present. The procedural formalities required by the customs and port authorities as also of the shipping lines can be completed well in advance and the cargo can be kept in the storage under bond. This would obviate the delays and consequent detention of the cargo on the wharf. In the absence of the conveyor belt facilities at Indian ports for loading of the frozen products, considerable damage is done to the outer packaging and the manual loading prolongs the time of shipment. It would be necessary to introduce these facilities at least at the ports of Cochin, Bombay and Madras, where traffic in these products is sufficient enough to justify the investment. At other ports it is desirable for exporters to provide the outer packaging strong enough to stand the strain of the voyage as well as the loading/unloading operations.

3.7 Export Trade in Dried Marine Products

India has been an exporter of traditional seafoods like sun-dried salted fish, dried shrimp, sharkfins and fishmaws. Exports of frozen seafoods began only in 1953 when processing for freezing prawn was initiated followed by canning in 1959. Since then the exports of these items have registered a rapid growth as indicated earlier. On the other hand dried fish and allied products which constituted the bulk of the exports upto 1952 have been on the decline since then. As a matter of fact the contribution of these items in the total export earnings of marine products declined to 10.3 per cent in 1968-69 from the earlier figure of 46 per cent in 1963-64. The principal factors responsible for the decline are:

a) Increase in the domestic consumption of fish in fresh, dried and salted forms, with improvement in the internal transportation facilities;

b) rise in demand for fresh prawn for the rapidly developing freezing and canning industry reduced the availability of the raw material for dried shrimp particularly in the context of limited prawn catches;

c) restrictions imposed by importing countries like Ceylon, total stoppage of imports by Burma on conclusion of a bilateral trade agreement with Pakistan involving exchange of rice for fishery products on account of foreign exchange difficulties and encouragement to local products for providing impetus to the development of local fisheries in Singapore and Hong Kong.

The overall trend of exports of these products is indicated in Table C-13.

During last seven years, the exports of dried fish reached a peak level of over 9,700 tonnes with a value of nearly Rs 15 million in 1964-65. In the subsequent years, there was a perceptible fall on account of low catch and a substantial cut in the demand effected by the new centralised buying agency constituted in Ceylon which is the largest market for Indian dried fish. Since then the exports have improved in terms of value but in terms of quantity they have yet to make much head-way to reach the peak as indicated in Table C-13. There is a general trend of decline in the

Table C-13

Exports of Dried Marine Products During 1962-63 to 1968-69

Qty: Tonnes
Val: '000 Rupees

Year	Total Exports of Marine Products		Total Exports of Dried Marine Products				Exports of Dried Fish		Exports of Dried Shrimp		Exports of Sharkfins and fishmaws		Others	
	Qty	Val	Qty	%	Val	%	Qty	Val	Qty	Val	Qty	Val	Qty	Val
1962-63	11,161	41,991	6,680	(59.9)	16,588	(39.5)	3,077	4,519	3,107	9,444	235	2,328	261	243
1963-64	19,057	60,872	12,919	(67.8)	28,019	(46.0)	9,395	15,080	2,922	9,277	394	3,455	208	207
1964-65	21,122	71,488	13,392	(63.4)	25,969	(36.3)	9,743	14,910	2,679	8,156	344	2,616	626	287
1965-66	15,295	70,632	6,602	(43.2)	13,045	(18.5)	4,679	6,392	1,418	4,599	213	1,724	292	330
1966-67	21,116	173,685	8,522	(40.4)	24,971	(14.4)	6,672	15,280	1,196	6,313	185	2,114	469	1,264
1967-68	21,907	197,171	7,217	(32.9)	26,908	(13.6)	4,567	11,766	1,928	10,426	319	3,915	403	901
1968-69	26,811	246,971	7,303	(27.2)	25,531	(10.3)	5,314	14,121	1,076	6,030	271	4,156	642	1,224

Source: Marine Products Export Promotion Council, Ernakulam.

exports of dried shrimp, except that the year 1967-68 has witnessed a remarkable increase in terms of value. With regard to the exports of sharkfins and fishmaws, the declining trend begun in 1964-65 continued right up to 1968-69 except for the year 1967-68, though value realisation has improved considerably.

Export of Dried Fish to the Ceylonese Market. The traditional market for Indian dried fish has been Ceylon taking as much as 95 per cent of the total exports. On the basis of a Trade Agreement between India and Ceylon, Indian shippers have been exporting this product mostly from the Tuticorin port. The quantity and value of exports during the last seven years are indicated below:

Table O-14

Exports of Dried Fish to Ceylon[14]

Year	Qty (Tonnes)	Value (Rs million)
1962	3460.88	4.85
1963	8066.51	1.23
1964	10240.48	16.01
1965	4567.48	6.64
1966	6671.12	15.50
1967	5320.00	13.56
1968	5387.91	14.04

---

[14] Source: State Trading Corporation of India Ltd, Tuticorin.

The import of dried fish by individual importers in Ceylon was banned after the formation of the Cooperative Wholesale Establishment in 1961. The Indian shippers continued to supply the goods in accordance with the terms and conditions, set forth in the price list issued by C.W.E.* from time to time. The price list was common for several countries such as India, Pakistan, Aden, etc. supplying dried fish to Ceylon. The supply was on c.i.f. basis and the payment was on landed weight and quality of the products. The Indian Overseas Bank Ltd., was the primary financier in this trade and was giving 50 per cent advance against shipping documents without any inspection of the goods. Indian shippers were prone to send goods of inferior quality and the C.W.E. took advantage by imposing arbitrary cuts in the value of the goods. Besides inordinate delays in receiving remittance caused hardships to the exporters. With a view to helping the trade and rendering financial assistance to the exporters, the State Trading Corporation came into the picture. The inspection of the goods was done by surveyors appointed by STC which paid 65 per cent of the f.o.b. value as advance against shipping documents. The final accounts were settled with the exporters after the STC received remittance from C.W.E. A service charge of 1 per cent on f.o.b. value was levied on the trade.

---

* Cooperative Wholesale Establishment.

However, the STC did not have any locus standi in the field, the trade being between C.W.E. and Indian shippers, it could not do much with regard to the problems of arbitrary cuts in the prices and delay in the remittance. In January, 1967, the C.W.E. published a list of 10 exporters who alone were permitted to export dried fish to Ceylon to the complete exclusion of others. Apparently this was done to maintain uniformity in quality and to avoid the clerical labour involved in dealing with too many small exporters. Consequently a large number of shippers who were traditionally doing this business were thrown out of the trade. They made request for canalising the dried fish export through STC. The Government of India thereupon issued a notification canalising the export of dried fish (excluding prawns, fish maws, shark fins, bache-de-mer and Bombay duck) from India to Ceylon with effect from April, 1967. The exports are now subjected to rigorous inspection and quality control by the Export Inspection Agency which has opened an office at Tuticorin for the purpose. The goods belonging to various shippers are pooled and one consolidated invoice is prepared for each shipment. Advances to shippers against shipment are now enhanced to 75 per cent of the f.o.b. value. The insurance of the goods is taken out by the parties individually. They also pay freight charges to the Tindal issues a Bill of Lading in favour of the STC. All customs and port dues are paid by STC on behalf of individual parties who pay the amount in advance.

Benefits of canalisation. It is too early to evaluate the role of STC in canalisation of the dried fish trade to Ceylon. However, its entry has brought back the small exporters into the business who were thrown out due to the arbitrary selection of suppliers by C.W.E.

Formerly the C.W.E. was imposing cuts in the invoiced value in an arbitrary manner and the trade did not have at its disposal any means of effective protest. The cuts are now less frequent and more reasonable than they were prior to canalisation. Now the shippers know that they can ordinarily expect to realise the invoiced value of their consignments with only some minor cuts due to shrinkage of the cargo. Reductions in the invoiced value of exceptional magnitude can occur only if the goods get wet during the transit on account of rough weather. That brings to light another advantage incidentally secured by trade due to canalisation. Formerly, the carrier boats were generally over loaded as the boat owners were interested only in the freight and did not mind taking extra packages on the deck. Now there is very little risk of the goods getting wet within the holds of the boats and none is exposed to the deck.

In the past the remittances from the C.W.E. were erratic and the trade was very much inconvenienced on account of uncertainty. The payments are now received much more promptly.

Prior to the entry of STC, the exporters had limited credit facilities from the private banks. Now STC provides advances at the rate of 75 per cent of the f.o.b. value of the goods shipped without any collateral security. Such liberal advance helps the exporters to increase their turnover.

Fish oozing with water and packages with excessive quantity of sand mixed with fish were common features of the trade in the past. After STC took-over only goods certified as export worthy by the Export Inspection Agency are allowed to be exported. This has brought about improvement in the quality of the goods shipped and on this basis the STC has been able to secure higher prices at least for some popular varieties like Sprat grade I, Malawa, Angulva, (W.o.h) and Balaya, (w.o.h.)*

---

* Without head.

Need for Diversification. Our major competitor for these items in the Ceylonese market is Pakistan. Taking advantage of the import entitlement at the rate of 25 per cent of the value of exports effected, the Pakistani exporters arrange the procurement of fish catches of the nearby countries in the mid sea itself to transform them into dried fish for export to Ceylon. This has enabled them to offer their products in the Ceylonese market at more competitive prices than what is possible for the Indian exporters. If such a state of affairs continues longer, we are likely to lose this important market. Besides, it will be necessary to diversify our trade in dried fish by promoting more trade with countries like Mauritius, Hong Kong and Singapore, which have been traditionally buying these products from India. It is also imperative to cultivate markets in Africa like Kenya, Tanzania, Nigeria and Fiji Islands, as well as in Australia.

Transportation of Dried Fish. Dried fish is generally treated as dirty cargo by shipping lines and accepted as a last resort when no other cargo is available. Therefore movement of this item is usually by country crafts. About 70 country crafts, the largest being of 100 tonnes, ply between Tuticorin and Ceylon mainly carrying dried fish. There are obvious hazards to cargo with such a mode of transport and damage is caused to goods by sea or rain water during voyages for which no insurance cover is available from the insurance companies except for the jettisoned cargo. To overcome this difficulty, it would be desirable to have regular and dependable services between India and Ceylon and countries in the Far East by using flat bottom motor vessels with a load draft of 12 feet so that they could berth along the jetty like the country crafts, and goods could be loaded from stacking yards at the jetty itself.

Marketing of Dried Prawns, Sharkfins & Fishmaws in Hong Kong and Singapore.

have been keeping up a steady demand for Indian dried prawns, sharkfins and fishmaws in recent years, as indicated in Tables C-15 & C-16.

Table C-15

Exports of Dried Prawns to Hong Kong and Singapore [15]

Qty: Tonnes
Val: Thousand Rupees

Year	Hong Kong		Singapore	
	Qty	Val	Qty	Val
1962-63	309	1,152	115	401
1963-64	315	1,152	115	398
1964-65	324	1,181	135	493
1965-66	287	1,040	29	102
1966-67	773	3,712	86	419
1967-68	1,187	6,255	97	511

[15] Source: Marine Products Export Promotion Council, Ernakulam.

Table C-16

Exports of Sharkfins and Fishmaws to Hong Kong and Singapore 16/

Qty: Tons
Val: Thousand Rupees

Year	Hong Kong		Singapore	
	Qty	Val	Qty	Val
1962-63	49	529	104	599
1963-64	42	440	175	1098
1964-65	67	387	182	1423
1965-66	12	157	142	778
1966-67	80	497	124	953
1967-68	47	753	203	1880

Of the total exports of dried prawns from India, Hong Kong's share was as much as 60 per cent in 1967-68. Similarly Singapore market accounted for 49 per cent of the total exports of sharkfins and fishmaws during 1967-68. Both the cities have free port and free market with practically no problems of foreign exchange. These markets are, therefore, highly competitive and therefore price and quality assume special importance.

Hong Kong Market. The importers in Hong Kong appear to be losing interest in the Indian products because of the losses suffered by many of them in importing dried prawns, sharkfins and fishmaws from India. During long period of voyage of 3-4 weeks from Indian ports goods suffer loss

---

16/ Source: Marine Products Export Promotion Council, Ernakulam.

in weight due to evaporation of moisture and sometimes due to slight deterioration of quality. Though the air-lifted samples of the goods are found satisfactory, the consignment of actual cargo is generally found not very satisfactory. It is necessary that the goods conform to certain minimum standards and are supplied with the minimum of spoilage. Specification should be prescribed for various grades of dried prawns. Besides, the quality and the colour have also to be quite good. With regard to import of Indian sharkfins and fishmaws, the general complaint is about the consignments not conforming to samples. The need for adequate grading of this product is emphasised by the importers. Within the large price range of sharkfins in the Hong Kong market, there are great variations. Most of the Indian exporters mix together different grades and consequently they obtain low price. Indian products, therefore, have to be graded by the importers before being sold in the market.

The importers and businessmen in Hong Kong are generally interested in quick turnover and not so much in high margin of profit. They, therefore, evince greater interest in the goods sent on consignment basis. This minimises the business risk by reducing the possibility of loss. At the same time best price can be obtained, of course, depending upon the seasonal conditions of the local market. Though general preference is for business on consignment basis, there is a willingness on the part of a few importers to consider paying an advance of 75 per cent of the value of the goods to really deserving parties.

Singapore Market. Indian sharkfins and fishmaws do not enjoy a monopoly in this market. There are several other sources of supply such as China (Mainland), Pakistan, Australia, Ceylon and East Africa. Indian products appear very inferior in comparison with those of competing countries largely on account of methods adopted in India for cutting, processing and packing. Some of the Indian processors and exporters, with a view to securing higher prices, cut the sharkfins with a liberal margin retaining some fleshy matter on the fins. This has not served any purpose since importers cut off this margin on which the exporters have paid additional freight. With regard to dried prawns importers often notice a large proportion of sand mixed with prawn supplied by India. It may be due to the prawn and sand getting mixed together at the time of drying. This has to be avoided. Since the Chinese population in Singapore attach considerable importance to colour, the red and black prawns should be separated before shipment to this market. It is also desirable to remove the black spot on the head, common in certain varieties of prawns. To maintain the quality the sun drying of the prawns has to be done thoroughly without use of artificial heat. The use of polythelene-lined bags would further help in preservation of the quality.

Like the Hong Kong market the business with Singapore is done on consignment basis. Importers in Singapore are prepared to buy on outright purchase basis provided Indian exporters can inspire greater confidence by regular supply of quality goods.

3.8 Domestic Consumption

Dried Fishery Products. For estimating the domestic consumption of dried fishery products no survey has been conducted so far in the country. There are obvious difficulties in collecting data in the absence of organised agencies for distribution of these products. However the disposition of the total fish landings available for the period of last five years can provide some basis for estimating the domestic consumption. (Table C-17).

Table C-17

Disposition of Catch in India [16/]

Qty: Thousand Tonnes

Year	Total catch (Marine Inland)	Marketing Fresh		Curing		Freezing/ Canning		Reduction		For miscellaneous uses	
		Qty	%	Qty	%	Qty	%	Qty	%	Qty	%
1964	1,320.0	924.3	70.01	286.7	21.71	18.8	1.42	77.6	5.88	12.8	0.98
1965	1,331.5	908.7	68.25	341.2	25.63	22.6	1.70	54.9	4.12	4.1	0.30
1966	1,367.4	963.1	70.43	299.7	21.92	34.0	2.49	52.8	3.86	17.8	1.30
1967	1,400.2	962.9	68.77	275.1	19.65	59.2	4.23	77.6	5.54	25.4	1.81
1968	1,525.9	1,055.1	69.15	294.9	19.33	72.8	4.77	79.0	5.18	24.1	1.57

[16/] : Source: Ministry of Food & Agriculture,
New Delhi.

Of the total fish landings an average of 69 per cent is marketed fresh, 22 per cent is used for curing, 3 per cent used for freezing and canning, 5 per cent is reduced to fish meal and 1 per cent is put to miscellaneous uses. It is estimated that about 50 per cent of the marine fish landings is marketed fresh and the remaining 50 per cent is mostly used as raw material for preparation of dried fishery products. The broad indication about the apparent domestic consumption of dried fish and fishery products in terms of fresh fish used has been arrived at by deducing the fresh fish used for export of these products. The ratio taken for converting the fresh fish into dried products is 5:1. Based on these assumptions Table C-18 indicates the domestic consumption of dried products in terms of fresh fish utilised.

The domestic consumption of dried fish which was about 88% in 1960 has gone up to about 92 per cent in 1968, registering 4 per cent increase. Consequently exports of these products have declined by 4 per cent. Marine fish landings have gone up by over 2 per cent during this period. The recent trend of the domestic consumption is likely to be enhanced further in the years to come with improvement in the transportation facilites. Therefore, for making available large exportable surplus of these products marine fish landings have to register much more rapid increase than what has been observed so far.

Table C-18

Domestic Consumption of Dried Fishery Products in India[17/]

(In terms of fresh fish utilised)

Qty: Tonnes

Year	Marine fish landings	Quantity of marine fish utilised for dried fishery products*	Quantity of marine fish used for exports	Exports of dried Fishery Products +	Percentage of column 4 to 3	Domestic consumption in Percentage
1960	879,681	439,840	52,495	10,499	11.94	88.06
1961	683,567	341,783	45,480	9,096	13.30	86.70
1962	644,244	322,122	21,560	4,312	6.70	93.30
1963	655,294	327,647	59,260	11,852	18.08	81.92
1964	860,350	430,175	67,795	13,559	15.76	84.24
1965	824,429	412,214	31,875	6,375	7.4	92.26
1966	889,942	444,971	40,770	8,154	9.16	90.84
1967	863,443	431,721	34,600	6,920	8.00	92.00
1968	904,186	452,093	35,640	7,128	7.88	92.12

* : It is generally estimated that on an average only 50 per cent of the marine fish landings is utilised for preparation of dried fishery products.

+ Includes dried fish, fish maws, shark fins and dried prawns.

17/: Source: Figures compiled from the Statistics available from FAO, Rome and Marine Products Export Promotion Council, India.

Existing and Future Pattern of Distribution. The large proportion of marine fish landings is consumed in the fresh form within the radius of 80 kms of the fish landing centres in India. These areas are covered by motor trucks, cars and even cycles. Rail transport is used only on selective routes for the transportation of a small quantity which goes to distant places like Calcutta and Delhi. The east coast centres like Visakhapatnam have developed a regular supply for the Calcutta market and the movement is by railways. Similarly Mangalore and Calicut supply fish to Madras and the movement is by rail transport. Important varieties like pomfret and dara from Gujarat move to Delhi market by rail transport whereas major quantity moves to Bombay by carrier boats. Likewise Ratnagiri, Goa and other west coast fishing centres transport fish to Bombay market by speed launches. Excepting these areas there is not much significant movement of fresh fish in other parts of the country. But it is envisaged that in future the distribution of fresh fish could be systematically organised by having a net-work connecting important cities of the country. Such a net-work would cover the following cities with the supply areas as indicated below:

Consuming Centres	Areas of Supply
Bangalore	Kerala Coast and Mangalore
Hyderabad	Mangalore, Malpe and other fish landing centres on Mysore and Maharashtra coasts
Nagpur	Goa, Ratnagiri and other fish landing centres on North Kanara coast
Delhi	Important fish landing centres in Gujarat
Bombay	Fish landing centres in Mysore, Goa, Maharashtra and Gujarat coasts
Calcutta	Andhra Pradesh and Orissa fish landing centres
Madras	Fish landing centres on South East coast from Tuticorin to Cuddalore and Kerala

The consuming centres should have cold storages for the purpose of distributing fresh fish to round about places. They will also be connected with feeder services of trucks and rail transport facilities. With the expansion of the market as envisaged by the above net-work, considerable quantities of fresh fish are likely to be demanded and consequently the quantity available for preparation of dried fish and other products is likely to be reduced. This aspect further emphasises the fact that the marine fish landings in the country have to increase at a faster rate so that large exportable surplus, either in fresh form or in dried form, is available for exports.

Shrimps. Information in internal consumption of shrimp in India is not readily available. This is largely on account of the fact that systematic channels of distribution for this item are not yet organised in the country. For want of adequate and suitable means of transportation and cold storages, internal consumption is largely confined to round about places of shrimp landings. Even here the consumption would vary depending upon the seasonality of the catch and the demand of the export market. The domestic consumption shown in Table C-19 is derived on the basis of the total production of raw shrimp and the quantity processed for exports.

Of the total landings of shrimp, the non-penaeid variety being very small in size is not utilised at present for processing and hence for exports. It is mostly consumed in the domestic market. The quantity of penaeid shrimps processed and exported in frozen, canned and dried forms is arrived at by taking the ratios of 2:1 for frozen 5:1 for canned and dried. The remaining quantity is taken as domestic consumption. This is indicated in percentage, column of Table C-19 The domestic consumption of penaeid shrimps was quite high upto 1961 as compared to subsequent years since the processing industry which is largely export-oriented had not developed adequately. There was sharp

Table C-19

Domestic Consumption of Shrimps 18/ in India

Qty: Tonnes

Year Year	Total Shrimp Landings			Quantity of raw shrimp utilised for Exports	Domestic consumption (Non-Penaeid)	Domestic consumption of Penaeid Shrimp	Percentage Domestic consumption of Penaeid shrimp to its landings
	Penaeid	Non-Penaeid	Total				
1960	31,759	36,271	67,030	10,942	56,088	19,817	62.4
1961	39,083	23,685	62,768	13,956	48,812	25,127	64.3
1962	48,251	34,984	83,235	24,666	58,569	23,585	48.9
1963	41,071	40,522	81,593	28,134	53,459	12,937	31.5
1964	63,389	31,506	94,895	32,155	62,740	31,234	49.3
1965	38,085	41,415	79,500	28,306	51,194	9,779	25.7
1966	56,146	34,768	90,914	30,998	59,916	25,148	44.8
1967	63,310	31,112	94,422	41,046	53,376	22,264	35.2
1968	69,467	31,922	101,389	47,039	54,350	22,428	32.3

18/ : Source: Marine Products Export Promotion Council, Ernakulam.

fall in the level of consumption which was 64.3 per cent in 1961 to 48.9 per cent in 1962 inspite of 23 per cent rise in the shrimp landings. Since then declining trend has reached the level of 32.3 per cent in 1968. However, in the general trend of decline, upward and downward variations are found depending upon the rise and fall in the shrimp landings. It is to be noted here that the domestic market consumes mostly the raw shrimps which cannot be processed on account of over-utilisation of processing capacity during the period of peak season of shrimp landings and those which deteriorate in quality during transit between landing places and processing units. Most of the processed products are exported and very little is consumed internally. Therefore, the question of domestic market exercising any pull on the exports of these items is not likely to arise for quite some time.

With the improvement in the transportation facilities for reefer cargo and development of cold storages in the cities, the urban population with relatively high standard of living would be in a position to consume some quantity of the processed shrimp products.

3.9 Incentives for Export of Fishery Products

In the wake of devaluation the export promotion scheme, which was introduced before devaluation, was abolished. It was substituted by import policy for registered exporters. Under this scheme, it was decided to issue import licences for raw materials and intermediaries including components and spares against exports effected by registered exporters on or after June 6, 1966. This import policy applies to registered exporters, merchant exporters or manufacturer-exporters, who hold valid registered certificates from the registration authorities. In case of marine products, the registration authority is the Marine Products Export Promotion Council and import licences have been issued for the items permissible to actual users engaged in the production and processing of fish and fishery products for exports to the extent recommended by the Ministry of Foreign Trade. At present, the value of the import licences issued is to the extent of 10 per cent of the value of exports effected by each individual exporter. The following items are permitted as import replenishment subject to certain conditions*.

---

* Import policy for registered exporters for fish and fishery products for the year 1969-70. (See Annexure III-A.

i. Refrigerants

ii. Spare parts and refrigeration and canning machinery and marine diesel engines.

iii. Printed or otherwise waxed cartons, master cartons, labels, cardboard cartons, corrugated board cartons and sleeves.

iv. Polythelene moulding powder

v. Tinplate.

vi. Stainless steel sheets and plates.

The list of items is periodically reviewed by the Ministry of Foreign Trade in consultation with DGTD and cases where the indigenous manufacture of items has been initiated ensuring sufficient supply, usually they are taken out from the subsequent list.

The then Ministry of Commerce also introduced a scheme for import of capital equipment in March, 1967 which provides allotment on a high priority basis of capital goods, equipment dyes, jigs and tools (not indigenously manufactured) to import out of a special allocation of foreign exchange. This has been done to enable expansion, modernisation and diversification of production facilities for enhancing exports. Depending upon the merits of individual cases, imports of larger size trawlers, low RPM marine diesel engines, plate freezers, refrigerants, compressors are also permitted.

In order to neutralise the incidence of the import and excise duties in the case of the products manufactured from imported materials, drawback of such duty is permitted under the customs and central excise duties drawback rules. For fish and fishery products at present, drawback is allowed on the following items.

i. Sanitary cans/dingley cans used as containers for the export of fish and fishery products;

ii. Cartons (waxed cartons, master cartons of different sizes made of paper board and corrugated board); and

iii. Labels.

In respect of sanitary/dingley cans drawback is permitted at present at the rate of Rs 887.50 per tonne. With regard to labels and cartons, rates of drawback vary from manufacturer to manufacturer and specific rates are fixed by the Government on the basis of the information furnished by the respective fabricators/manufacturers.

The Government of India by notification dated June 22, 1968 issued by the Ministry of Finance (Department of Revenue) has exempted from duty the refined diesel oil intended to be used in fishing vessels designed for deep sea fishing which are more than 13.7 metres in length and 150 BHP*

---

* Under the present policy of the Government of India, only ocean going vessels are exempted from excise duty on fuel consumption.

Under this order 1.08 kilo litre of refined diesel oil is available free of duty on production of proof for export of one tonne of shrimp and subject to compliance with other conditions laid down in the Government order referred to above.

The present import policy for registered exporters of fish and fishery products appears to suffer from certain limitations. Fishing hooks permitted under REP scheme are of little use in shrimp fishing. A liberal percentage, as much as 25 per cent of the face value of the import licences, provided for the import of stainless steel does not seem to be of much use to the industry. In the circumstances when nominations of the licencees are permitted, REP scheme is liable to be misused, particularly in the Indian economy wherein imported items can fetch a high premium in the open market. This is also true of a few other useful items like spare parts for marine diesel engines and refrigeration machinery which can also be utilised by firms other than those engaged in fishing and fish processing. Therefore, the existing REP scheme requires careful review by the Government in the light of its very limited usefulness and actual needs of the industry.

The drawback of excise and customs duties at present permitted on cans and packaging material has to some extent brought relief to the high cost of packaging of fish and fishery products. However this arrangement does not appear to be satisfactory, especially with regard to packaging material which has to be imported in bulk and the medium and small category of exporters generally do not avail of this facility to avoid locking up funds in the inventory of such material.

Indian seafood industry is largely export-oriented. In the past-devaluation period the exports have gone up from Rs 135 million in 1966 to Rs 331 million in 1969. This trend is not only to be sustained but has to be enhanced during the Fourth and Fifth Plan periods. This would be possible if the industry is assisted to overcome the inhibitions in its development and disadvantages suffered in marketing its products abroad. The major problems faced by the industry as detailed elsewhere in this study can briefly be stated as:

i) High cost of fishing vessels indigenously built;

ii) Difficulties in the import of fishing vessels especially trawlers of large sizes on account of shortage of foreign exchange and cost of rupee investment;

iii) High cost of raw material on account of insufficient supply;

iv) High cost of handling and processing on account of insufficient facilities of infrastructure and cost of packaging material; and

v) High cost of fuel oil used by fishing vessels.

These problems arise mainly from the existing structure of the industry. Besides, considerable efforts are necessary for diversification of the marketing effort by finding new markets for existing products and outlets for new products.

For the purpose of diversification of markets for the export of new items of fish and fishery products, liberal assistance shall have to be provided to the industry. At present a few export-firms have been experimenting with new items of export like filleted pomfrets, and laminated Bombay duck with encouraging results in terms of market acceptance. However, Indian firms are incurring losses on account of competition from established suppliers. Such losses can be made good by providing compensatory cash assistance at present permitted in the exports of non-traditional items like engineering goods, chemicals and food items like biscuits, confectioneries etc.

As indicated earlier in this section the Indian marine products suffer from considerable freight disadvantage in the distant markets like Japan, USA and continental countries. Since international shipping conferences cannot be persuaded to completely wipe out the freight disadvantage, it would be necessary to assist the Indian shippers to neutralise the present difference in the freight impact in comparison with other competitors. Shipping facilities, particularly, in terms of reefer vessels are not adequately available at a number of ports where it is envisaged to have a new complex of processing units. For quite some time the products shall have to move to major ports, and therefore, concession in railway freights becomes necessary as it is permitted for other export items. Even at present during monsoon the products from Mangalore have to be removed all the way to Cochin for shipment. The export firms in Mangalore incur considerable transport charges in reaching their products to Cochin. Similar situations are likely to arise particularly, for the processing units to be located on the east coast and on the northwest coast.

3.10 Marketing of Fish in India

The problem of marketing of fish in India is rather complicated and has necessarily to be viewed from an overall angle in view of the nature of fisheries widely dispersed landings and the varied types of markets to be served. Saurashtra, for instance produces large quantities of fish but on account of the local food habits, nearly 90 per cent of the total catches has to be marketed in other areas. Chilka Lake is an important producing centre; but for economic reasons the bulk of the catch is marketed in Calcutta. Bombay is a large producing and consuming centre and handles a considerable volume of fish, coming into the city from the fishing centres in the adjoining states of Gujarat and Mysore and also supply good quantity of fish to the neighbouring centres both in the State and outside. Calcutta and the adjoining areas in West Bengal do not produce adequate quantity of fresh water fish and have very limited quantities of sea fish. But Calcutta and some of the industrial centres in West Bengal are extremely important as large centres of fish consumption. Landings of fish in many areas along the South West Coast are large. Small quantity is transported to the adjoining

States of Mysore and Tamil Nadu for consumption as fresh fish but a major share of the landings is sent to the curing yards for salting, drying and other forms of processing to meet requirements of domestic as well as overseas markets.

Taking into consideration varied factors involved in the handling of fish for distribution and marketing, efforts have been made to draw up schemes for marketing of fish on an all-India basis through major consuming centres in cooperation with the State Governments and with the help of marketing experts.

Gujarat. In Gujarat fish landed in Saurashtra sector and South Gujarat coast are mostly marketed outside the State. The quality fish like pomfret, Indian salmon and jew fish and hilsa are mostly transported either in carrier boats with ice or by train and trucks to important consuming centres like Bombay, Jaipur, Delhi etc. Majority of the fish is moved to Bombay in view of the attractive prices offered in the city. The other varieties of fish are normally salted and dried for marketing as dried fish. Bombay ducks landed in South Gujarat are consumed to a limited extent as fresh fish but the bulk of them are dried. The same is the case with Bombay ducks landed at South Saurashtra Coast.

In Saurashtra region upto 1950-51, the fish merchants used to bind the fishermen for low prices by advancing loans. But since 1951-52, a system of fixing prices in consultation with concerned interests was adopted much to the benefit of the fishermen. Before commencement of the fishing season, the fishermen, fish traders and the representatives of fishermen Cooperative Societies fix the prices of the different varieties of fish for the coming season in advance. The Department of Fisheries assists in the fixation of fish price. From 1956 onwards the Fishermen Cooperative Societies became organised and were able to obtain a better price for the fishermen and eliminated some of the undue profits made by the middlemen. The trade does acknowledge the services of middlemen in its own way for limited purposes.

In view of the fact that the marketing of fresh fish landed in Gujarat has to be in the neighbouring States and outside the country, the marketing societies and the traders have taken steps for provision of adequate facilities for ice and transport and store houses in the consuming centres. Steps have also been taken for obtaining necessary finance through cooperative banks and Agricultural Refinance Corporations for marketing of fish in recent years.

Maharashtra. In Maharashtra fresh fish from the northern sector of the State is brought into Bombay either by train or trucks by cooperative societies and traders for marketing in the city. Fresh fish brought into Bombay city in the morning is auctioned in the central markets under the existing regulations of the municipality. Fishing vessels operating from Sassoon Docks land their catches in the port where they are auctioned to wholesalers and retailers in the usual manner of the fish trade. With regard to the fresh fish brought from Saurashtra and Mysore similar systems operate according to the season in the different centres. However, some of the fishermen cooperative societies at Satpati and Versova have undertaken marketing of fish themselves.

Mysore. In Mysore especially, Mangalore, marketing is organised by Federation of Cooperative Societies. South Kanara District Federation has organised the system of marketing alongwith the production and distribution so well that it can be cited as one of the best cooperative federations in the country today for taking up the various activities of fisheries and contributing to the increased production of fish. Similar system is being organised in North Kanara at Karwar. The activities covered under the system are economically sound and the Scheduled Banks and the Agricultural Refinance Corporation (ARC) find no difficulty in financing them.

Tamil Nadu. In Tamil Nadu at Madras and Tuticorin fresh fish is auctioned according to the regulation of the local bodies and is distributed through different modes of conveyance to meet the requirements of internal markets. Normally the distribution of fresh fish is over a radius of 320 to 480 kms. In view of the increased landings of shrimps during the last five years and for want of adequate facilities for freezing, shrimps were purchased by the processors from the east coast and taken to Cochin from some of the selected centres in Tamil Nadu either by insulated trucks or by train. But at present a few processing plants are being established which purchase these landings for their own use. The distribution system still requires to be improved. The Federation of Cooperatives are not yet organised in a satisfactory manner for marketing of fresh fish.

Orissa. Marketing of fish in Orissa varies according to the type of fishery, namely marine, esturine and inland. Marketing of fish from Chilka Lake is effected by export-merchants, who collect the fish from carrier agents. The State Fishery Department started experiments in 1949-50 to develop cooperative marketing, which has eliminated the exploiting merchants leaving carrier agents, and auctioneers undisturbed. The marketing of inland fish from ponds, reservoirs and rivers is done by fishermen (and a few middlemen), who have acquired the fishing rights. In most cases the fishermen are not able to compete with the rich middlemen in acquiring the rights. But attempts have been made to place certain fishing areas belonging to the State, directly at the disposal of fishermen cooperatives with satisfactory results.

Uttar Pradesh. The Uttar Pradesh Government have taken steps for marketing of fish on regional basis. Fish caught from some Government-owned waters is marketed on a no-profit no-loss basis. Fish retail sale centres have been established in six places for supplying fish at reasonable rates and cooperative organisations are being encouraged to take up fish culture and marketing.

Kerala. There are several fishermen cooperative societies in Kerala. Most of them are credit societies and a few are involved in fishing operations. These societies are also engaged in various other occupations like sale of foodgrains, distribution of yarn and even coir making. Some of the societies are doing good work in cooperative fishing. However, only a few societies have undertaken marketing of fish.

Middlemen in Auction Sales. In many places fish markets are controlled by middlemen or powerful rings of businessmen, with the result the fisherman gets small amount for his produce though the consumer pays a high price for the fish. In Calcutta, Bombay and Madras, though fish is sold by auctioning under regulation enforced by Municipal authorities or by understanding arrived at by the concerned merchants, the hold of middlemen is felt strongly. In Kerala, fishermen in most of the fishing villages are heavily indebted to middle class merchants who advance money for the purchase of boats and nets. By a custom followed for a long time and in certain cases through written documents the fishermen are bound to supply all fish to these merchants at a price fixed by the latter which could never be advantageous to the former. Even though a sort of pay off is happening in kind at one side, continuous borrowing on the other side perpetually keeps the fishermen under the clutches of the merchants. The middlemen do perform certain functions but their activities require regulations for the development of healthy marketing practices.

In the auctions as a marketing system the middlemen monopolise the marketing of fish which enables them to recover the loans from the proceeds of sales. Such loans are invariably given to the fishermen in advance. On account of the indebtedness the fishermen get low prices for the catches in comparison with the prices quoted at the consuming centre. The major defects in fish marketing system prevalent in India and other developing countries are:

(a) System of affording credit facilities to fishermen by traders,

(b) Unnecessary overhead expenditure on transport and storage of fish which the fishermen have to bear,
(c) Manipulation of weights and measures,
(d) Arbitrary deduction from the sale proceeds of the fishermen for religious and charitable purposes,
(e) Practice of taking away fish as samples,
(f) System of bargaining between the seller's agent and the buyer, secretly, particularly in marketing of dried fish,
(g) Tendency of the broker to favour the buyer rather than seller,
(h) Lack of facilities for distribution in the event of a dispute, and
(i) Pricing policies of the middlemen leaving no incentive for the fishermen.

Some of the defects have been overcome by the introduction of regulatory and other related measures. During the last twenty years the Fisheries Departments have been functioning as credit societies. With the development of mechanisation of fishing craft and the consequent increase in production it was felt necessary that the cooperatives should undertake marketing of fish to realise the benefits of increased production. The Reserve Bank of India conducted preliminary surveys with regard to the scope of financing the fishing industry in 1954 and suggested implementation of pilot marketing federations, in Saurashtra, Kerala and Madras in 1956. The Rural Credit Survey Committee suggested suitable methods for organisations of cooperatives at three levels. Accordingly, Marketing Federations have been organised in Andhra Pradesh, Bihar, Gujarat, Kerala, Tamil Nadu, Mysore, Orissa and West Bengal.

Role of Cooperatives. Cooperative marketing has not made much headway except in a few States. In Andhra Pradesh the marketing societies in Hyderabad, Vijayawada and Visakhapatnam do some useful work but they have to be strengthened considerably. In Gujarat the Federation of Cooperatives provides adequate facilities for organised marketing of fish both fresh and dried in view of the demand from important market centres. In Kerala marketing societies were organised in selected centres but the impact has not been effective excepting in a few. In Maharashtra some societies have organised themselves for the effective marketing of fish in view of the market potential of Bombay. The Cooperative Federation in Bangalore has built up a whole system of marketing of fish very effectively and is now able to contribute to the development of fishing industry to an appreciable extent. In Tamil Nadu two Federations have been operating with a fair degree of success. In Orissa the cooperative marketing system organised for handling the catches of Chilka Lake needs improvement. The Government of Uttar Pradesh has taken steps to market fish on regional basis and the task has been entrusted to cooperative organisations.

In recent years some of the State Governments have organised Fisheries Corporations not only for increasing production of fish but also marketing of fish within the country and outside. These corporations have shown varying degrees of success in marketing.

3.11 Fish Marketing Organisations in Selected Foreign Countries

A brief resume of the Fish Marketing Organisations and other related arrangements is given below:

Hong Kong. The Government of Hong Kong by a special ordinance on marine fish marketing passed in 1962 and revised in 1964, provides for the control of the landing and wholesale marketing of marine fish. It also empowers the Government to control the import and export of fish and fishery products and for the establishment of a fish marketing organisation for encouraging cooperative marketing. It has been provided that no marine fish may be landed, bought and sold other than at places and markets specified by the regulations. The functions of the fish marketing organisation are:

(a) to establish, regulate and conduct wholesale fish markets, depots and ancillary establishments, and to furnish the Governor with all such information as he may require;
(b) to buy, sell, grade, pack, store in a depot for sale process, insure, advertise and transport fishery products;
(c) to buy, sell, hire or let out for hire anything required in the production, adoption for sale and transport of fishery products;
(d) to provide such services as may be deemed necessary for the improvement of marketing of fishery products and the promotion of cooperative enterprise in the fishery industry;
(e) to make provision for the education, health and welfare of persons employed in the fishery industry; and
(f) to make loans to persons employed in the fishery industry.

The Fish Marketing Organisation has been also empowered to make by-laws concerning the wholesale marketing of marine fish for the purposes of regulating the landing, transport and storage. Besides providing regulation for the general conduct of the market operations, it can also formulate rules for organisation of depots, ancillary establishments necessary for the marketing of fish.

The subsidiary legislation of the marine fish marketing regulations stipulate that every person who exports marine fish shall have to furnish detailed information about his business.

The market also exercises control over the purchase of marine fish. It has been provided that no person shall be entitled to bid at an auction in the market or purchase marine fish unless he is a registered buyer or an employee of the organisation acting on the instruction of the Manager of the market with detailed information about the nature of his business or reason for his application to be a buyer.

The fish marketing organisation also lays down methods of sale and payments. All sales of marine fish at a market shall be by way of auction except where an alternative method of sale is authorised by the Manager with the approval of the fish market organisation. If before bidding has commenced, the seller of fish informs the auctioneer and all other persons present, he is permitted to place a reserve price of any marine fish to be sold. If in actual bidding the reserve price is not reached, the auctioneer shall declare the fish not to be sold. A commission at the rate of 6 per cent of the purchase price of fish has to be paid to the organisation for the services provided in respect of sales at the market and the commission may be deducted from the sales price by the Manager before payment is made to the seller. The Manager may allow the registered buyer to make purchases on credit subject to such terms and conditions as laid down and approved by the Organisation. The Manager can also accept cash deposits from registered buyer for future purchases at the market.

Bangkok. The Fish Marketing Organisation was establisned in the beginning of 1953 and is owned by the Government under the control of the Ministry of Agriculture. It is governed by an executive committee and managed by a director. It is set-up under a special Act FMO with the approval of the Minister of Agriculture. The Act authorises the establishment of a wholesale market for fishery products in any suitable place as an auction market wherein licensed fish agents must perform their business. The broad objectives of FMO are:

(a) to carry out and improve the business of Wholesale Fish Market and fishing industry;
(b) to carry out, control and direct the service in connection with the business of fish agents, transport and other related matters;
(c) to promote the welfare or occupation of fishermen and growth of fishing villages; and
(d) to promote fishing cooperative societies or associations.

The Bangkok Fish Market is situated on the left bank of the Chow Phya River in Varnawa district of Bangkok and is about 30 kms from the sea. It covers an area of 7.2 acres with a river front of 24.6 metres long for wharfing vessels. The cost of building the market was about 7.17 million Baht. As per the regulation issued by the Department of Fisheries, fish agents, dealing in the auctioning of fish and fishery products have to conduct their business in this centralised fish market.

Each fish agent acts both as an auctioneer and agent for fishermen. As an auctioneer, he can charge a commission at the rate fixed by the regulation which at present is at the rate of 6 per cent on the gross sales. Most of the fishermen obtain loans from fish agents for conducting fishing operations. This has been long established practice and fishermen are contracted to send their catches for sale to their particular fish agents. The agents while selling on behalf of fishermen would deduct 6 per cent commission and other incidental costs such as transport, freight and icing from the gross sales of the product. Moreover, the agent would also deduct a sum of money as deposits providing security for their loans at five per cent of gross sales. After deducting various charges of loans including deposits, the balance amount would be returned to the fishermen at the end of contracted fishing season.

The number of actual retailers attending the auction at the Bangkok Fish Market is about 1,000 persons daily. The auctioneer announces the selling price of the products and the buyers would bid from the lowest up to the price no one bids further.

For facilitating the market operations, the various products are divided into two broad categories namely the Platu (Rastrelliger) and the miscellaneous. The miscellaneous are usually sold in baskets made of bamboo with a net content of 10-20 kg. or in flat bamboo basket with a net content of 8-12 kg. In case of the bottom fishes caught by trawl fishing and kept well in wooden trays with ice, the bidding is done individually for each tray with a net content of 12 to 15 kgs. However, the high priced fish is generally sold in pieces. The Platu is sold on weight basis of which a unit of 30 kgs is normally preferred by the auctioneer. The bidding price of a lot of Platu per unit must be offered to the buyer and accepted by the auctioneer first and afterwards the whole lot of Platu will be measured out with the weighing machine. With regard to dried and salted fish products bid is done for each basket, weighing about 60 kgs. In case of Platu, the bidding is done in a lot of several baskets, each one holding about 122 to 200 kgs. With regard to fresh water fish, the price offered is on bid basis. Each fish container with about 40-80 kgs weight is considered for bidding.

The fish market opens early in the morning at 4.00 a.m. Most of the transactions are over by 9.00 a.m. Separate timings are kept for auctioning of fresh marine fish, dried and salted fish products and fresh water fish. Normally the products are brought from coastal towns on the Gulf of Thailand and areas on the Indian ocean-side by vessels, trucks and railways.

The FMO collects 1 per cent commission on the transacted sale from the fish agents for its administrative expenditure and for the welfare of fishing communities. Of the total amount collected by the FMO a part is set aside (25 per cent) as a rural welfare fund. The rest of the amount is to be spent in the actual functioning of the market and future development programmes.

The present Bangkok fish market, in recent years, has been facing many problems on account of the rapid increase in fish landings and the heavy traffic of fish transporting vehicles. The area actually utilised by the activities of the fish market is only one-third of the total area and the rest is occupied by roads, government cold storage organisation and the Department of Fisheries. Moreover, the present situation of the market offers no convenience to in-coming fishing boats because they often have to wait for the bridge to open up. The fishing boats are becoming bigger in size than what they were in the past. The existing dock of the fish market becomes inadequate having a length of only 246 metres. The present landings of fish, on the other hand, have increased four times, i.e., from about 27,000 tonnes in 1953 to about 1,08,000 tonnes in 1968. However it should be noted that most of the fish landings are brought in the market by roads since in recent years many roads connecting Bangkok to many coastal provinces both on the Gulf of Thailand and the Indian ocean sides have been built. Consequently the fish market has to suffer from the pressure of heavy traffic within the premises of the market. The market, therefore, has become too congested for the growing requirements of the fish trade.

Expansion to the surrounding areas is not feasible since the area within the vicinity is occupied by several industrial establishments. It was for this reasons that the Government considered it necessary to establish a new fish market on a suitable site.

For meeting the requirements of the future, the Government has prepared a project for the construction of a new fish market which is expected to be ready by 1974 and would be in a position to meet the requirements of the fish trade for the next thirty years. It is also suggested

that in the new market facilities like cold storage, ice factories, fish processing plants, water supplies fuel supplies, accommodation for fish containers etc.,
would be provided. The mooring places of
fishing boats of 300 to 2,000 tonnes would be also provided. Besides, the new market would be having much better sanitation and would be more economical for the users.

Singapore. A new fishing port and central fish market was opened at Jurong in early 1969. Construction of a well-equipped jetty, fish market, cold storage, ice plants and other supporting shore facilities has involved an investment of $ 3.5 million. These facilities are being provided for better and efficient fish landing facilities and for more economical and speedy distribution of fish. Fish auction and other business would be conducted at the 40 acre plot at Jurong fishing harbour. About 70 fish merchants who operated from Beach road market and affected by the urban renewal scheme have shifted to the new market place. However, small fishing vessels like Sampans not requiring port clearance will continue to land their fish catches at many fish landing areas on the island, like Kangkar at the mouth of the Sarangoon river.

Tokyo. The Tokyo fish market has an area of 21,000 sq. metres, 50 per cent of which is occupied by structures and buildings for ice and cold storage plants, stalls for the retailers and wholesalers, offices for the fishing companies etc. It has a parking area for 2,500 cars and trucks into the market area from 5.0' clock in the morning till 12 noon. There are 20,000 persons employed in the market and 40,000 persons visit the market as buyers, auctioneers and retailers.

Normally about 4,000 to 5,000 tonnes of fish are landed and auctioned in the market every day. The three large companies indicated below handle a major portion of these catches:

(1) Daito Taiyo
(2) Chuo Gyorui Kabushi Gucki (Central American Marketing Company)
(3) Toyo Suisan Kabushi Gucki

In Tokyo market, there are five ice plants, each plant with a capacity of 3,000 tonnes per day. Four companies have a frozen storage of 5,000 tonnes each. On a particular day, 80 tuna boats are berthed in the fishing port and about 1,600 tonnes of tuna are released for sale.

Each tuna boat normally brings about 200 tonnes of fish. The catches mainly consist of yellow fin, bonito and skipjack, each weighing 20 to 100 kgs. The skipjack are mostly caught in the Indian ocean.

Of the total quantity of fish products handled in the market, 33 per cent are fresh fish, 33 per cent frozen fish and the remaining dried, salted and processed fish and fish products.

United Kingdom. Most of the fish landed by vessels in UK including the landings of foreign vessels is sold by auction. To protect the interest of fishermen against the vagaries of demand and supply factors and to ensure stability of price, the trawler owners operate a voluntary minimum price scheme for demersal fish. The prices fixed under this scheme are below the cost of production and are intended to set a level to the auction price. The sale of fish by UK vessels is subsidised to an extent of 11 Pence per stone for white fish 8 Pence per stone for mackerel, pilchards and sprats; and 2¾ Pence for other fish. At the same time, the White Fish Authority levy a charge on the industry not exceeding 2 Pence per stone of white fish landed in UK for the development of fisheries. A similar scheme is in operation for herring species by the Herring Industry Board.

The catch of freezer trawlers is not usually accounted but is sold by contract and passes through the integrated concerns of the trawler company. The pattern of marketing after the first hand sale varies from port to port. Quick frozen fish is growing more popular and is steadily increasing from 16 per cent of the total landings three years ago to 20 per cent in 1968. Processing is more important for herring than white fish and the bulk of herring catch is sold after processing unlike the white fish.

The bulk of demersal fish is sold unprocessed and about 50 per cent of the wet fish is sold in UK by retail fish mongers, 30 per cent by fish friers and the reminder through catering establishments. The traditional chain of distribution for wet fish is from the port to wholesaler to inland wholesaler and then to the retailer.

Norway. Fishermen's Sales Organisation and Export Trade Organisation were established in 1929 as marketing organisations for protecting the interests of fishermen who had very little say in fixing the price of fish and fishery products till then. Several such organisations were formed subsequently for important species of fish. Under the Raw Fish Act passed in December 1951 concerning sale of raw fish and as amended in June 1956, Government prohibits marketing, processing or export of fish unless the first hand sales of fish take place through or with the permission of the Fishermen's Sales Organisation. So far 13 such sales organisations have been formed and they handle 98 per cent of the quality and 96 per cent of the value of all fish landed in Norway. Some of the important organisations are listed below:

Norwegian Herring Sales Organisation
The Fat Herring Sales Organisation
The Porbeagle Sales Organisation
Norwegian Raw Fish Organisation
Norwegian Live Fish Organisation
Norwegian Mackerel Organisation.

Fish prices for the herring and cod species are fixed periodically by the State authorities in consultation with the Fishermen's Sales Organisations and exporters organisations. Prices for herring are guaranteed by the Price Equalisation Fund and for cod and related species are fixed by the sales organisation in consultation with the State Authorities. There are separate equalisation funds, one for herring products and one for all other fish. When the export price is obtained in excess of standard price, a certain proportion is paid to the appropriate fund. Alternatively when price obtained is below the standard price, the difference may be made out of the concerned fund.

A strict quality check is maintained by the inspectors of sales organisations at all landing points in the country and suspected fish is sent for reduction to fishmeal. The organisation charges 3 per cent on the gross sales price for meeting administrative and handling expenses. The government levies a tax of 13 per cent on all first hand sales except for the fish going for reduction.

Denmark. A voluntary minimum price system was instituted in 1967 for the marketing of raw fish by Fishermen's Organisation. The price equalisation fund was also established by imposing a special levy on landed fish. Recently a Sub-Committee has been set-up by the Government for drafting a legislative proposal for instituting a minimum price system for raw fish on a statutory basis. The proposal envisages a more extensive system than the existing voluntary arrangement brought about by the Fishermen's Organisation. No direct subsidies are generally available to fisheries in Denmark excepting for the Faroe Island fishermen and the fishermen of Greenland.

Netherlands. More than half of the landings of fish is concentrated at the fishing harbours of Scheveningen and Ijmuiden. The supply of flat fish at these two harbours as also of herring is more than all other harbours put together. Facilities at these harbours include the Municipal foundation fish auction where a true "dutch" auction is conducted. The auctioneer indicates the number of cases of fish to be sold and the bids for sole and quality fish are by telephone in the special auction hall. The prices are flashed by an electrical indicator on a descending scale. Mackerel, herring and other flat fish are auctioned in the lower market in conventional manner with the use of descending scale. The market is located right on the jetty and is most convenient for discharge of fish and supply of fresh water for cleaning the fish holds. Ice is not supplied at this jetty. The Government commodity inspection service for quality control which begins at the vessels continues with the establishment of wholesalers, canning factories, freezing plants and goes right up to retail establishments. Members of the Commodity Marketing Board fix a minimum price at which fish can be sold in consultation with the owners of the vessel and wholesalers. No fish can be sold except at a Municipal auction and no buyer can bid unless he is duly authorised to do so. The fishermen are protected by an equalisation fund which is used when the price for herring is low. The fish unfit for human consumption has to be sent for reduction and no equalisation of price is applicable. Even for the owners of vessels with freezing facilities on board, the catch must pass through the Municipal auction for which a charge of 3 per cent of the cost is levied.

Lessons for India. The marketing of fresh fish by auction has been an universal practice on account of highly perishable nature of the product and the seasonality of production. In most countries reviewed above, it has been ensured, through voluntary cooperation of buyers and sellers and in Far East countries through appropriate legislation, that fish marketing is conducted at a central place. Markets are organised and regulated either by cooperative agencies or by creating separate fish marketing organisations. Buyers and sellers operating in the market are registered and they carry on their operations through the auctioning mechanism provided by the marketing organisations. For giving reasonable returns to fishermen, floor prices or reserved prices are fixed and no bidding is permitted below that level. In some countries special funds are created by levying a cess on the fish landings for compensating the fishermen when prices are depressed in the market. The marketing organisation provides the necessary infrastructure thus required for landing, handling, marketing and transport of fish. In a country like India with a vast coastline there is a greater need for having a centralised fish marketing system operating at principal landing centres on west as well as east coasts. In the absence of a suitable organisation at present fish marketing is carried on at numerous places in a different manner.

The hold of the middlemen is also considerable and the fishermen as sellers are the worst sufferers in the existing fish marketing arrangement. Suitable marketing organisations shall have to be set-up at fishing harbours and at important landing places. The mechanised as well as non-mechanised fishing vessels shall have to be registered with proper authorities and should be brought under obligation to bring their catches to the nearest central marketing place. Buyers and sellers who want to operate in these markets shall have to register themselves and the marketing agency shall have to organise auctioning systems with a view to eliminating the hold of the middlemen. The auctioning operation shall have to be conducted within the floor and ceiling prices to be fixed from time to time by consultation with the concerned interests. This would ensure a fair price to the seller as well as buyer of the fish. It will also be necessary to provide adequate infrastructure facilities for landing, handling, marketing and transportation of fish at the marketing places.

4. FINANCE AND CREDIT

Fisheries, in contrast to agriculture, are relatively isolated from the rest of the economy in nearly all countries. The most important factor influencing the economic position of the fishing industry all over the world is the common property character of fishing grounds, since everybody is allowed to fish in the fishing grounds and the competition amongst fishermen leads to the fishing operations as much and as quick as possible. This encourages increasing amount of investment in fishing vessels and leads to vast absolescence of vessels until a point is reached where earnings are even insufficient to cover a reasonable allowance for depreciation, thereby leading to a position of loss. At the same time its dependence on nature which accounts for uncertainty and increases in the risk elements also influence ability of the industry to attract investment finance.

In many developed countries though per capita income and savings are high permitting a high level of investment in respect of this industry, they are obliged to provide credit facilities to important fisheries.

In most developing countries the per capita income and savings are low and technical knowhow is restricted. The fishing industries in these countries find it difficult to raise sufficient investment capital. The private investors can be attracted to a limited extent and that too only where export prospects are viable.

It is necessary to bear in mind that national fisheries are industries in their own right with all the attendant economic problems connected with the industrial operations - they take place in free enterprise or in a planned economy. Appeals to commercial companies to expand their fishery operations for humanitarian reasons or because the demand for protien exists in some developing countries will not necessarily bring a response unless there are commercial prospects for fishery development. It should be recognised that where the fishing industries are entirely dependent on State investment or on capital contribution from private sector, a reasonable return must be available to satisfy the investors. While considering investment in fisheries, it is necessary to examine the nature of the industry itself and to appraise its potential in relation to other industries which compete for the pool of capital available. In some countries where a reasonable level of investments is maintained, it is more a reflection of the contribution which such investments make to other sectors of the industry such as boat building, ship repairs etc. than the stimulus of market demand for fishery products. In such a situation fisheries may become more an adjunct of a national shipbuilding industry than an industry in its right. Considering the contribution the industry can make to a country's economy in terms of additional food, foreign exchange earnings, employment etc. governments of developing countries having fishing industries have been taking a keen interest in its development by providing financial assistance from public and institutional funds. But investment on a commercial nature and on an intensive scale has not been forthcoming except in cases where export prospects are available and joint ventures have been permitted.

The importance of Government's role in financing the fishing industry has been emphasised on account of the following reasons:

a) the common property character of marine fisheries operations;

b) dependence on nature, increasing risk elements;

c) the prepondrance of small enterprises enhancing competition and all other attendant disadvantages;

d) flucturations in the demand of overseas markets; and

e) the need for preparation of economically viable projects for financial investment in the fishing industry.

The use of public or institutional funds to provide financial assistance for nationally desirable objectives for which enough investment through ordinary commercial channels is not forthcoming either on account of risks involved or the magnitude of investments required, has been recognised world over as an acceptable form of assistance. Financial assistance in the form of grants loans, subsidies and other credit facilities, is accordingly in operation in a large number of countries.

Economic considerations are of equal importance when it comes to fishing companies overseas investment. The major factors which influence foreign investments in joint ventures in developing countries relate to investment climate, share in ownership, local partners, repatriation of profits, local financing facilities and taxation.

In addition, factors like availability of trained personnel for operating the fishing vessels, the scope for employment of foreign technicians, the availability of locally manufactured equipment and materials on competitive prices, and fiscal and financial incentives offered by the Government - particularly for exports, have also to be borne in mind. For export oriented fishing industry which is to compete in the world markets, it is necessary to ensure that the cost it has to pay for equipment etc. does not affect the competitiveness of these products in the world markets.

For successful operation of such ventures, it is essential that both the local partners and the overseas investors are basically motivated by a desire for the development of the industry with full involvement on their part in the joint venture. For this purpose, it is essential that joint venture has a management team which is capable of understanding all the complexities of the industry within the country. Only on a true partnership basis can the interests of the recipient and the donor be united to achieve the optimum growth of the industry.

4.1 Domestic Finance

In India, the Government of India and the State Governments have been contributing towards the financing of a large number of fishery development schemes, mainly in the form of loans and grants for mechanised fishing boats, marine diesel engines, ice and cold storage plants, refrigerated or insulated transport etc. according to the pattern approved by the Government of India and/or the State Government concerned. The pattern of financial assistance varies from State to State depending on the pace of development and the status of the industry. Recently, there has been a scaling down of subsidies in some of these items, even though their costs have gone up.

Till recently, most of the financing for fishery development schemes was done by the Government. Institutional finance is now available to the fishing industry from various sources on different terms and conditions. The Agricultural Refinance Corporation (ARC), the Industrial Development Bank of India (IDBI), and direct Plan outlays form the bulk of Government credit. Financial assistance is provided for production, processing and marketing. In the production sector, medium term (5-7 years) loans are given for the acquisition and improvement of fishing vessels and purchase of engines and gear. Working capital is available for marketing, fishery requisites, housing facilities and for the repayment of prior debts. Loans are considered for the processing sector to cover the acquisition of processing, ice-making and cold-storage plants and transport facilities. Finance for working capital to processors is at present not available from governmental sources.

Agricultural Refinance Corporation. Since 1967 fisheries programmes have been eligible for ARC assistance. Only those fisheries project proposals routed through cooperative federations are proposed to be considered by the ARC. Refinance is channeled through the State cooperative banks for comprehensive programmes of development.

In formulating a project proposal, the ARC expects the fisheries cooperatives to include the following aspects:

a) boat building, repair, servicing;
b) provision of gear (engines, winches, etc.);
c) ice, cold storage, freezing;
d) installation of processing plants (where applicable);
e) godowns for storage of dried fish;
f) facilities for transport and marketing.

When the scheme is approved refinance is made available to cover fixed capital expenses of:

a) mechanised boats, boat building yards;
b) ice plant, cold storage, freezing;
c) processing facilities;
d) marketing;
e) administration of cooperatives.

Fisheries projects under the ARC have been considered in Maharashtra, Mysore, Tamil Nadu and Gujarat. The projects in Mysore began operation in 1968 and schemes in other States were scheduled to begin in 1969. Upto 31st December, 1969, the Corporation has sanctioned seven schemes in different States and the total outlay on them amounted to Rs 43.18 million. The Corporation's involvement in the total outlay would be of the order of Rs 25.45 million.

The State governments concerned give the guarantee for the repayment of the loan.

Mysore. Schemes for development of fisheries, financed by long term loans from the ARC approved in 1967, were implemented by the cooperative federations in the two coastal districts, North and South Kanara, in 1968.

North Kanara. The North Kanara District Cooperative Fish Marketing Union has got a scheme sanctioned for obtaining financial assistance in the form of loan from ARC through Mysore State Cooperative Bank to the extent of Rs 3.85 million (77%) and a subsidy of Rs 1.15 million (23%) from the government during 1969-71 as given below:

Year	Amount (Rs million)
1st year	1.50
2nd year	1.56
3rd year	1.94

The Federation will undertake construction of the boats at the cooperative boat building yard at Karwar. The boats will be given for operation to groups of four or five trained member fishermen. The operators will receive 25 per cent of the sale proceeds of the catch, the balance being retained by the Union which will be responsible for processing and marketing the catch and for the supply of fishery requisites to operators. An incentive bonus scheme is included in the project. Under this scheme a yearly bonus will be given to the operation by the size of the catch landed.

Details of Activities under the Scheme. a) Mechanised boats: 100 boats of a uniform size (30') and installed with 30-35 H.P. engines are to be introduced over a three year period - 25 during the first year, 35 in the second year and 40 in the third year. Cost of each boat is estimated at Rs 49,000.

b) Ice plant and freezing facilities: The Union will have the use of ice plant, cold storage and freezing unit being constructed by the Indo-Norwegian Project at Karwar. Export of prawns is to begin during the second year of the project.

c) Fish meal plant: The trash fish in the catch will be supplied to this plant which will have a ½ tonne per day capacity. Construction cost of the plant is assessed at Rs 50,000.

d) Canning plant: Fish for canning will include medium size prawns, sardines and mackerel. The Union expects to produce for sale 800,000 (4½ oz.) cans of fish.

e) Supply of fishery requisites and consumer goods: The Union will make bulk purchases of nets, nylon twine, cotton yarn, ropes and floats. Consumer goods will also be purchased wholesale and sold to the members of the Cooperative Union.

Refinance from the ARC will be provided in three instalments. Repayment of principal and interest at 8½ per cent per annum on each instalment for the mechanised boat will take place within seven years, beginning in the first year. The loan for the fishmeal plant, servicing station and canning plant is to be repaid within five years, beginning in the second year.

South Kanara. The block capital for the project will be provided by the ARC loan, 71.5 per cent as an initial loan, and a government subsidy of 19.3 per cent. The ARC loan and the subsidy are to be disbursed over a three year period, to the Federation through the State Bank of India or the Cooperative Bank system.

The South Kanara District Cooperative Fish Marketing Federation will administer the project.

A total of Rs 8.94 million will be advanced by the ARC over a three year period in the following manner:

Year	Amount (Rs million)
1st year	2.82
2nd year	2.72
3rd year	3.40

The Federation will undertake construction of mechanised boats to be operated by trained fishermen. The operators will receive 30 per cent of the value of the catch, the balance being retained by the Federation. An incentive bonus system will be introduced. Out of the annual net surplus each crew will receive a bonus in proportion to the catches delivered.

Details of Activities under the Scheme. a) Mechanised boats: A total of 240 mechanised boats (30' with 35-40 H.P. engines) will be constructed, 60 in the first year, 80 in the second year and 100 in the third year.

b) Ice plant, cold storage and freezing facilities: The Federation has already undertaken on its own the construction of an ice plant (10 tonnes/day, capacity) cold storage (30 tonnes), and a freezing unit (5 tonnes/day with storage capacity of 100 tonnes). These facilities are being built at a cost of ₨ 1.15 million with the aid of a two-phased State government loan.

c) Fishmeal plant will be supplied with trash fish from the catches. Its capacity is planned at ½ tonne per day. The cost of construction will be ₨ 50,000.

d) Canning plant: Mackerels, sardines and medium size prawns will be used for canning. Block capital cost of the plant will be Rs 160,000. Annual output is planned at 800,000 (4½ oz.) cans.

e) Retail stalls: Six retail stalls with cold storage cabinets will be established to dispose off fresh fish. One transport van will be needed to supply fish to these stalls.

f) Supply of fishery requisites and consumer goods will be purchased wholesale and sold to the members on a no-profit and no-loss basis.

Repayment of the loan for mechanised boats to be completed within six years, will begin in the first year. Loans for construction of boat building yards and processing facilities will be repaid within five years, repayment beginning in the second year. Interest on loans is calculated at 8½ per cent per annum.

Tamil Nadu. Applications have been made to the ARC to finance two cooperative fisheries projects, one in the Madras and Chingelput Districts and the other in the Tirunelveli District. Both programmes were scheduled to begin in 1969.

i) Madras - Chingelput. Finance from the ARC will be provided through the Tamil Nadu State Cooperative Bank. The Madras Fishermen Cooperative Federation will be responsible for executing the project. The State government will furnish subsidy at the rate of 50 per cent on engine and 25 per cent on hull and nets. An additional loan will be taken to cover the cost of projects not included in the scope of the ARC programme.

A loan of Rs 1.90 million (67.6 per cent of the total cost of the project) to cover fixed and working capital for initial three years of the project's operation will be advanced by the ARC from 1969-70 to 1971-72, in three instalments of Rs 700,000, Rs 600,000 and Rs 600,000.

The boats will be constructed by the Tirunelveli District Cooperative Boat Building Yard and the Department of Fisheries boatyards at Marina and Royapuram. The crew will receive 50 per cent of the anticipated value of the catch as soon as it is landed. Under the incentive bonus system, the crew will be paid a yearly bonus, based on some proportion of the catch delivered.

Details of Activities under the Scheme. a) Mechanised boats: Fifty mechanised boats (30' with 30 H.P. engine) will be supplied during the first three years; 10 in first year and 20 each in the second and third years.

b) Ice plant, cold storage, freezing facilities: The Cooperative will build a 2 tonnes capacity ice plant and a cold storage unit of 5 tonnes. The Cooperative also proposed to use the State Department of Fisheries freezing unit at Ennore to process prawn catches.

c) A centre will service 50 mechanised boats belonging to the cooperatives and will be constructed by the Federation out of its own resources.

d) Transport facilities: Two insulated vans will be purchased at a cost of ₨ 100,000 to transport fish to the ten retail stalls.

e) Retail stalls: Ten stalls will be established in Madras city, five in the second year and five in the third. The stalls will be equipped with insulated boxes for storing fish or ice. Capital cost of the stalls is estimated at ₨ 20,000.

f) Fisheries requisites and consumer goods: Nets, twine, floats and consumer goods will be purchased in bulk for sale to the members on a no-profit and no-loss basis.

Repayment of the loan for mechanised boats will begin in the first year at an interest rate of 8½ per cent per annum. Repayment of principal and interest on loans for other activities will be deferred until the third year.

Interest at 4 per cent for the first year and 4½ per cent for the second year will be surcharged on the amount of interest deferred during the first two years. This surcharge will be payable at the end of the second year. Instalments of loans for mechanised boats and other activities are to be repaid within seven years.

Commitment charges of 1/5 per cent per annum will be charged on any funds not withdrawn on schedule by the cooperatives. Such a charge should provide an additional incentive to keep the development programme on schedule.

ii) Tirunelveli District. The loan from the ARC will be disbursed by the Tamil Nadu State Cooperative Bank and the Tirunelveli District Cooperative Central Bank.

The requirements of working capital will be met out of the Federation's funds and the funds made available by State participation in the share capital of the organisation. The State government will also provide subsidy at the rate of 50 per cent on engines and 25 per cent on hull and net.

The ARC refinance will be administered by the Tirunelveli District Fishermen Cooperative Federation. A total of Rs 3.78 million refinance from the ARC will be advanced in three yearly instalments.

Year	Amount (Rs million)
1st year	0.73
2nd year	1.05
3rd year	2.00

This amount will cover the block capital requirements of the project.

The Federation will construct the boats in its own boat building yard and give them for operation to groups of trained fishermen. The crew will receive 33.3 per cent of the value of the catch. Spot checks will be made on the boats at the grounds, to assure that all the fish being caught are landed. The Federation will be responsible for transport and marketing of the catch.

Details of Activities under the Scheme. a) Expansion of the boat building yard: The present capacity of the boatyard is 20 boats (30' and 32' length) per year. It is proposed to expand the annual capacity to 80 boats of the same size at a cost of Rs 700,000.

b) Mechanised boats: Introduction of mechanised boats will begin in third year of the project (25 boats in the third year and 50 in the fourth year). These 75 boats will be 32' length and fitted with 40-50 H.P. engines.

c) Other activities: The scope of this project will be limited to expansion of the boatyard and the introduction of mechanised boats. An ice plant, cold sotrage, canning factory and fish meal plant belonging to all will be at the disposal of the Federation. The Department is also planning to instal a freezing unit in Tuticorin. As these overheads are already provided, they have not been included in the project outline.

Repayment of the principal and interest (at 8½ per cent per annum) on the ARC loan will begin in the third year to be completed within eight years of the initial loan instalment.

Maharashtra. The ARG has sanctioned a comprehensive proposal for a cooperative fisheries project in Ratnagiri district of Maharashtra.

The ARC will provide the loan requirements through the Maharashtra State Cooperative Bank and the District Central Cooperative Bank. Non-redeemable share capital from government and cooperative bank cash credit to meet working capital expenses will supply the balance.

The programme will be carried out by the Ratnagiri District Federation of fisheries cooperative societies. Two units will be established, the main unit at Ratnagiri and a sub-unit at Malwan.

The total amount of the ARC loan was raised from an earlier amount of Rs 2.914 to Rs 3.077 million (67.5 per cent of the total) due to the inadequate share capital of the Federation. The balance of the fixed capital costs (Rs 1.984 million) will be met from the non-redeemable share capital.

Operation of all the mechanised boats will begin in the second year of the project. Processing and related activities will begin in the third year. The Federation will construct the boats and install the necessary equipment. The crew will receive 25 per cent share of the value of the catch, the balance being retained by the Federation to cover operating expenses and repayment of the ARC loan. In addition to this 25 per cent, each crew will receive a yearly incentive bonus equal to some proportion of the catch. Ownership of the boats will be transferred to the members only after repayment of the loan. Until that time the Federation will be responsible for the operation and maintenance of the boats.

Details of Activities under the Scheme. a) Mechanised boats: 40 mechanised boats will be introduced at the rate of 20 each year during the first two years of the project. The estimated cost of a 15 tonne (25' to 40') vessel equipped with a 60 H.P. engine is Rs 70,500, assuming that the marine diesel engines will be imported. Thirty of these boats will operate out of Ratnagiri and ten out of the sub-unit at Malwan.

b) Ice plant, cold storage, freezing unit will be installed in Ratnagiri and Malwan. At Ratnagiri the ice plant will have only 5 tonnes per day capacity, cold storage of 30 tonnes, and a freezing plant capacity of one tonne per day. The capital cost of these units will be Rs 770,000. The units at Malwan will have capacities of 5 tonnes per day (ice), 20 tonnes/day (cold storage), ½ tonne/day (freezing) and 4 tonnes/day (frozen storage). Installation cost of these units will be Rs 363,000.

c) Service stations: Centres for maintenance and repair of the mechanised boats will be established at Ratnagiri and Malwan at a cost of Rs 135,000.

The loan from the ARC is to be repaid, beginning from the first year, in equal annual instalments within a period of twelve years after the initial disbursement. Interest will be charged at the rate of 8½ per cent per annum.

Gujarat. The ARC scheme for Umbergaon District in Gujarat is the only project involving export of laminated Bombay duck, fishmaws and sharkfins. Projects in other States involve export of prawns as well as marketing of fresh fish.

Block capital to implement the project will be made available by the ARC, through the State Cooperative Apex Bank, and government subsidy. Working capital will be supplied by the Gujarat State Cooperative Bank and contributions to share capital made by the State Government to the Umbergaon Fishermen's Sarvodaya Sahakari Society Ltd.

A total sum of Rs 4.15 million (69.8 per cent of the total capital outlay) will be disbursed in three yearly instalments.

Year	Amount (Rs million)
1st year	1.15
2nd year	1.34
3rd year	1.66

The boats will be constructed at the Society's own boatyard and given for operation to groups of nine members. The crew will receive 30 per cent of the value of the catch. The market rate for the fish will be adjusted every two weeks. Ownership of the boats will be transferred to members after repayment of the loan. To encourage disposal of the entire catch with the Federation, an annual incentive bonus, based on the size of the catch, will be paid.

Details of Activities under the Scheme. a) Mechanised boats: A total of 60 mechanised boats (45' length fitted with 40-45 H.P. engines) will be built for operation over a three year period (15 in the first year, 20 in the second year and 25 in the third year). Government will subsidize construction of these boats at the rate of 25 per cent on the hull, 40 per cent on the engines, 30 per cent on nylon nets and 20 per cent on cotton nets. Cost of each boat, without subsidy, is estimated at Rs 94,500.

b) The Society already is operating its own ice plant (5 tonnes/day) and cold storage (50 tonnes). No expansion is planned under the project.

c) Processing: A unit for manufacturing laminated Bombay duck will be constructed to supplement the present method of sun-drying.

d) Supply of fishery requisites: Nylon and cotton twine, hemp and coal tar will be supplied on a non-profit no-loss basis.

Repayment of the loan for the mechanised boats will begin in the first year, and the entire amount will have to be repaid within seven years. The loan for other activities is to be repaid, within three years. Interest will be calculated at 8½ per cent per annum.

Finances from Scheduled Banks. Commercial banks in several maritime states of India provide loans to co-operatives and to individual fishermen for the purchase of mechanised boats. Details of the schemes of selected banks are outlined below.

(i) State Bank of India. The SBI provides 75 per cent of the cost of the boat and engine, with the operator providing the balance in one instalment. The loan is to be repaid over a seven year period in 63 monthly instalments assuming a nine month fishing season at an interest rate of 9¼ per cent per annum. The Bank approves the loan only when the following conditions are satisfied:

a) the hull and deck equipment of a new boat are ready;
b) the engines are to be installed only in boats, i.e. the loan is not approved in the case of replacement engines;
c) the boat must be insured.

Upon notification from the boat builder and the engine manufacturers that payment of the 25 per cent margin has been received, the bank forwards the 75 per cent balance. The boat builder notifies the Bank by issuing a "no due" certificate on the boat.

In practice the conditions that (a) 25 per cent of the cost of the boat must be provided by the fishermen before receiving the 75 per cent loan and (b) that the hull must be ready with the applicant, are difficult to be fulfilled. The payment for the hull will be made provided 25 per cent of the total cost of the boat and engine is paid by the operator.

The boat and engine are mortgaged with the Bank, but are nominally owned by the operator. The Bank expects the engine manufacturer and the boat builder to assume the "moral" responsibility for the repayment of the loan. No one party apart from the fisherman is responsible for guaranteeing the loan. This situation is in contrast to the ARC schemes under which the State governments or the Co-operative Federations guarantee the repayment.

Twenty five per cent of the total cost of the hull and engine is set as the operator's share to give him "stake" in the successful operation of the boat. For instance, in practice Ratnagiri fishermen have to borrow

25 per cent (about Rs 20,000) from the boat builder, processor or a third party. Terms and conditions of these loans are somewhat stringent. It is more often the case that the hull is repaired (at a cost of Rs 10,000) rather than a new hull being built (at a cost of Rs 20,000). The boat builder or processor also assures this cost, issuing a "no due" certificate to enable the fisherman to apply for the SBI's 75 per cent loan. The catch is then bound to the boat builder, the processor, or the third party till the loan is repaid. The SBI scheme suffers from three principal drawbacks:

1. The scheme reaches only a small segment of the fishery industry.
2. The initial investment is beyond the capacity of the fisherman to afford from his own savings/earnings. He is compelled to run into debt to other creditors to satisfy the conditions, under which the SBI approves the loan. If the demand is such the operators are willing to enter into such multiple debt arrangements, perhaps the SBI should consider a scheme to make the boats and engines available to the fishermen under conditions that would not require their taking one or more loans in addition to the 75 per cent provided by the State Bank.

3. Because the government does not guarantee the loan, the manufacturer feels that the risk is greater than if someone besides the operators could be held responsible for the payment. The manufacturers argue that they cannot afford to provide the additional 25 per cent.

Possible modifications in the present scheme could be suggested in the area of extending the items covered and the quantum of subsidy. The scheme might also include replacement of engines and the SBI could increase the loan to 85 or 95 per cent keeping the terms of repayment the same (seven years in 63 instalments at 9¼ per cent) to obviate operator borrowing at disadvantageous terms. The operator would be constantly "reminded" of his repayment obligation. (A long repayment period is a deterrent to investment in new equipment with improved technology).

The State Bank of India had made a study of this industry in the States of Tamil Nadu, Kerala and Mysore and has already started providing financial assistance for the supply of mechanised fishing boats, processing plants and boat building yards. The assistance given so far is indicated below:

a) Supply of mechanised fishing boats: Rs 3.5 million at 8½ per cent interest towards the loan of 75 per cent of the value of boats in Kerala and Tamil Nadu (six units).

b) Processing units: a loan of Rs 4.6 million at 7½ per cent interest and the packing credit at 6½ per cent interest are made available in Kerala and Tamil Nadu under the terms normally given to small scale industries.

c) Boat building yards: A sum of Rs 2.1 million at 8½ per cent to one unit in Madras.

(ii) State Bank of Mysore. The Bank finances fishermen through the South Kanara Cooperative Fish Marketing Federation. While the Bank's risk in issuing the loan is considerably reduced, the scheme contains all the disincentives for any collective production effort. The responsibility of the individual fisherman is subordinated to the authority of the Federation.

Only those fishermen who have been selected by the Federation can apply for loans. The security offered to the Bank is in the form of immovable property, a third party guarantee, or the boat itself (on the recommendation of the Federation). The cash requirements are the same as of the SBI Plan. The fishermen are required to deposit 25 per cent of the cost of the hull and engine. In cases where the operator is not in a position to fulfil the requirements, the Federation makes advances on his behalf. Recovery of the principal and interest (at 9¼ p.a.) is made over a period of five years in quarterly instalments, beginning after three to six months of the issue of the loan. A repayment year is calculated on the basis of fishing season lasting from December to June. The Federation assumes complete responsibility for construction, maintenance of the boats and repayment of the loan.

The principal condition for the advance is that the fisherman will deliver his entire daily catch to the Federation. In return the Federation issues vouchers for the value of the catch, 50 per cent of which is paid in cash and the balance deposited toward loan repayment.

This programme is expected to be successful due to the efficient organization and administration of the South Kanara Co-operative Federation. In future it is expected that the fishermen, under the auspices of the Federation, will be allowed to mortgage their own boats with the bank in lieu of the 25 per cent deposit now required.

(iii) Other Commercial Banks. The Syndicate Bank, Canara Bank and Indian Overseas Bank advance loans to fishermen in Mysore and Kerala on similar terms and conditions as of the SBI. Their security policy, being more liberal than that of the State Bank of Mysore, enables them to extend loans to fishermen who might not otherwise qualify. The Syndicate Bank also makes loans through the South Kanara Federation.

The Indian Overseas Bank is, at present, the only bank which advances loans for processing facilities. Other commercial banks have not been anxious to include processing facilities under their credit schemes. It is felt that these facilities should not be diverted to the processors, who qualify for adequate industrial finance from other sources.

The Commercial Banks together with States in which they are advancing loans for the purchase of mechanised boats are indicated below:

Bank	States
State Bank of India	Maharashtra, Kerala, Tamil Nadu and Mysore
State Bank of Mysore	Mysore and Kerala
Canara Bank	Mysore, Kerala and Tamil Nadu
Syndicate Bank	Mysore, Kerala and Tamil Nadu
Central Bank of India	Mysore and Tamil Nadu
Bank of India Ltd.	Kerala and Mysore
Indian Overseas Bank	Mysore, Kerala and Tamil Nadu
Karnataka Bank	Mysore
Indian Bank Ltd.	Tamil Nadu
Vysya Bank Ltd.	Mysore

Industrial Development Bank of India (IDBI). In an attempt to foster both the export and internal sales of indigenous machinery, the IDBI adopted a policy of rediscounting sales of indigenous machinery on deferred payment basis. The programme was undertaken in April, 1965. In the beginning the scope of this programme included only a limited number of industries. In March, 1966 this facility was extended to agricultural equipment and engineering design firms. Owing to the decline in exports and scarcity of domestic credit in the post-devaluation period, the rediscounting scheme was considerably liberalised and its coverage expanded. In August, 1967, therefore the purchase of fishing trawlers on deferred payment was included under this assistance programme.

The IDBI rediscounts bills of exchange/promissory notes discounted by member financing institutions. Among the 88 institutions eligible to offer rediscounting facilities to indigenous machinery manufacturers, mention must be made of the Industrial Credit and Investment Corporation of India, Industrial Finance Corporation, the State Finance Corporations (including Madras Industrial Investment Corporation), Scheduled Banks, and the State Cooperative Banks.

Rediscounting Facilities for Procuring Machinery on Deferred Payment Basis. The IDBI considers applications for rediscounting assistance on sales of machinery valued between Rs 10,000 and Rs 5 million. In the initial stages the maximum period of deferred payment was five years, which has since been extended to seven years.

Terms and conditions. The rediscount rate was revised several times in view of the criticism that the IDBI's rate made financial assistance under the scheme more expensive than direct assistance. Under the revised rates, the rediscount charge is 5 per cent on bills/promissory notes having an unexpired usage of not less than 5 years.

The financing institution is permitted to charge only 2 per cent within lending rates of 7 per cent. For bills/promissory notes of more than 6 months and less than five years, the rediscount rate is 6 per cent with a lending rate of 8 per cent. There are concessional rates, which work out to a normal rediscount rate of 6½ per cent and a normal rate of 2½ per cent.

Other Financial Assistance. The IDBI grants direct financial assistance to industry in the form of rupee and foreign currency loans, refinance of industrial loans, medium-term export credits, and development assistance to high-risk and low yield projects.

4.2 International Finance and Credit

Grants and Credit. India receives assistance in the form of loans and suppliers' credit from other countries and international organisations. Many of these are earmarked for purchase of specific products in the supplying countries or tied to large-scale capital intensive development projects in India.

Credits, loans and suppliers' credit are made available for essential imports of products which are not being manufactured indigenously, cannot be produced in adequate quantity, and cannot be manufactured to meet required specifications.

Repayment arrangements for foreign assistance vary according to the type of credit, the supplying country, and the time factor involved. For "tied" loans, the interest rate is usually lower and the repayment period longer. The total cost in foreign exchange of tied loans may be higher, however, because of higher unit prices in the supplying country. For most of the bilateral loans the interest rate is about 3½ per cent with a repayment period of 10-20 years. Suppliers' credit fall between foreign aid and normal commercial credits. Interest rates vary between 5 to 8 per cent per annum, with an average repayment period of ten years. The principal drawback of these credits is that they are to be repaid in foreign exchange. Table D-1 indicates the magnitude and nature of assistance from some of the countries.

Table D-1

International Assistance for Indian Fishing Industry

Country	Amount	Terms and Conditions
Japan	Yen 150.61 billion	(a) Loans for the purchase of processing equipment
	(Rs 313.8 million)	(b) To be repaid in 10-18 years
Switzerland	S. Francs 210.00 (Rs 228.80 million)	(a) For import of capital goods (b) To be repaid in instalments in 10 years
Yugoslavia	Rs 214.30 million	(a) Import of ships and marine diesel engines
Sweden	S. Kroners 24.00 million (Rs 34.8 million)	(a) For fishing trawlers
France	$ 17.00 million (Rs 127.5 million)	(a) Purchase of raw material and equipment (b) To be repaid in 10 years

Trade Agreements

Under the terms of bilateral rupee trade agreements with East European countries, raw materials for the Indian fishing industry can be imported without involving any foreign exchange. Trade agreements with Poland, the German Democratic Republic, Rumania, the USSR and Yugoslavia provide for the import of fishery equipment along with the requirements of the merchant marine as detailed below:

Poland:	Fishing boats, Dredgers, Tug boats, River craft, Ship's engines and Equipment.
GDR:	Harbour equipment
Rumania:	Fishing vessels
USSR:	Marine diesel engines
Yugoslavia:	Fishing vessels, Cargo ships, Marine diesel engines

Norway: Under an agreement signed between the Government of Norway, the Government of India and the United Nations on 31st March 1967, a credit of ₨ 15 million was provided to the fishing industry for the purchase of fishery equipment including fishing vessels, fish processing equipment, electronic equipment and spare parts for the existing machinery in use, in the Indo-Norwegian Project Centres at Ernakulam, Karwar, Cannanore and Mandapam Camp.

Utilisation of Credit

The following items of equipment for the fishing industry have so far been procured or committed in the different credit programmes.

Yen Credit:	Rs 17.84 million
(a) Marine Diesel Engines	(YANMAR)
(b) Electronic equipment	
Danish Credit:	Rs 6.90 million
(a) Marine diesel engine	(BUKH)
Dutch Credit:	Rs 1.25 million
(a) Caprolactum for nylon	
Yugoslav Credit:	Rs 6.50 million
(a) Torpedo engine	
GDR Credit:	Rs 3.2 million
(a) One fishing vessel	
Norwegian Credit	Rs 15 million
(a) For equipment (not yet utilised)	
Sweden:	Rs 5.10 million
(a) Only two gift vessels (CIFO)	

There have been some difficulties in the immediate utilisation of the credit due to procedural delays, thus depriving the industry of the facility for importing items of equipment required immediately, with consequential effects on other related operations. Such a delay for instance in the import of fishing vessels would affect the return of the processing establishments and also cause unnecessary blocking of capital. These delays are caused due to procedural functions and differences in the pattern of financing for the procurement of such equipment. In the case of fishing vessels normally facilities are available for supply on deferred payment arrangement with delivery given on payment of 15 to 20 per cent of the cost; such an arrangement should also be considered in the schemes operating under credit offered for fishing equipment by other countries.

Cooley Loans

Cooley loans are available in rupees under the PL 480 Funds of USA These loans can be extended to finance certain local currency costs of a project that contributes to the economic development of the country. The assistance is eligible for costs including fixed assets like land, buildings and machinery and associated costs like construction, freight, installation charges and customs duties, payable in rupees. Costs towards working capital are not generally covered by these loans. Cooley loans are not for financing or refinancing loans previously incurred by the borrower.

A project will be considered under this loan, if it fulfils the following conditions:

> Contributes to the economic development of the country through business and trade expansion.
>
> Involves investment of capital or technical know-how by an American firm.
>
> Expands the market for the U.S. agricultural products.
>
> Is not competitive to the US products.

This last requirement has been waived frequently in cases where the US market is so large as to accommodate foreign as well as local suppliers.

A cooley loan of Rs 2 million was granted to an Indo-American joint venture for shrimp processing and export. Shortage of raw materials and the inability to secure the needed trawlers stood in the way of utilisation of the loan. Nevertheless the USAID Loan Division maintains its interest in projects of this nature.

International Agencies

The International Bank for Reconstruction and Development and International Development Agency have been considering financing the fisheries projects in the country. Two FAO/IBRD teams visited India in 1965-66 and examined the scope for financing commercial projects in selected centres. The Government of India have now submitted for consideration fisheries projects at Bombay, Madras, Tuticorin, Cochin and Visakhapatnam to the IBRD. A team from the World Bank also discussed these projects in detail in New Delhi, late in June 1969 after visiting some of these centres.

In response to the recommendation of the First Session of UNCTAD the International Finance Corporation was permitted in 1965 to borrow from the World Bank up to a limit of four times the Corporation's unimparted subscribed capital and surplus. This enables the IFC to expand its activities to include investments without Government guarantees in production oriented enterprises, to stimulate international flow of private capital and to render assistance to less developed countries in the growth of their capital markets. The investments of International Finance Corporation have generally taken loans. IFC has helped many enterprises to finance joint ventures on the field.

FAO's investment centre was established in 1968, using the facilities and staff of FAO/IBRD Cooperative Programme, as an important function in the provision of investment information. Pre-investment programmes for survey of harbours, fishermen training, off-shore development etc. organised since 1966 by the UNDP allocations for fishery development projects in Asia and executed by FAO have contributed/or are contributing to the promotion of private investment in fisheries.

With a view to accelerating the economic development of Asia and Far East the Asian Development Bank was established in December, 1966 to promote investment in the region for public and private capital for development purposes. Fisheries are one of the less developed industries to which financial institutions had paid very littl regard and the Asian Development Bank had considered the requirements of fishing industry as one of the important sectors in the region.

The South East Asian Fisheries Development Centre was established in December 1967 in Bangkok and the agreement was signed by Japan, Malaysia, Philippines, Singapore, Thailand and Vietnam for promoting mutual cooperation in the field of fisheries development. The functions of this centre include training of fisheries technicians, investigations on fishing grounds and resources, standardisation of fishery commodities, technical assistance for the development of fisheries for contributing to the pre-investment programme of fishery development.

The possibility of attracting finance from the IBRD and the Asian Development Bank for commercial fishery projects in India should be explored for the projects recommended in this Survey. There should not be any difficulty in this respect, because of the fact that FAO/IBRD are already aware of the potential scope and the prospects of commercial undertaking in the field of fisheries. In drawing up such a programme the possibility of joint ventures especially with Japan, USA and Kuwait be considered. In addition the scope for utilising the cooley loans for joint venture programmes with parties in USA may also be considered.

4.3 Financial Assistance to Fishing Industry

Asia. Problems concerning the promotion of investment in fisheries in the developing countries of Asia will have to be identified and the fisheries investment areas selected with the due care to the various countries in the region.* Export oriented fisheries with broad world markets usually attract private investors more than the fisheries for which domestic markets have to be developed. The development of export oriented fisheries helps to spread modern techniques and at the same time the domestic fisheries are also assisted in the introduction of industrial approach to fisheries. The increasing world trade in some of the fishery products like shrimp, tuna and sardines will attract investment in the region in collaboration with overseas investors as joint ventures. Normally, it is difficult to enlist foreign support for the development of fisheries serving domestic markets. It is, therefore, the responsibility of the Government to provide the necessary infrastructure in the form of fishing ports, transport and to develop a suitable climate for attracting investment of capital. Besides financial assistance in the form of loan and subsidies in the early phases of development and adequate incentives and tax concessions for the different aspects of fishing, processing and marketing become necessary, to participate in an international competitive market. Such credits and incentives have been provided by a number of developed and developing countries in North America, South America, Europe, Asia and Africa. The types of financial assistance and incentives provide in some of the countries in these regions are explained below:

---

* S. Konda, 1969 - Fisheries Investment in the developing countries of Asia - International Conference on Investment in Fisheries, FAO, 1969.

Japan. In Japan the promotion of investment in export-oriented fisheries proved to be an effective measure for promotion of investment in fisheries in general. The first Japanese freezing plant was established in 1919 and exports of frozen tuna began about 1930. After the establishment of the export-oriented fish freezing industry, the production of frozen fish for consumption in Japan increased rapidly.

In pursuance of the recommendation of UNCTAD in 1964, the Japanese Government amended the law for controlling foreign trade and promoted private investment by Japanese firms in foreign countries. The Corporation Tax Law (Law No. 341, 1965) was also amended to avoid double taxation. Japan concluded conventions for the prevention of double taxation on income with 16 countries including five Asian countries, namely, India, Malaysia, Pakistan, Singapore and Thailand. In October 1968, there were 38 overseas joint fishery ventures with Japanese capital investment; of these 30 were active, 6 were inactive and 2 had discontinued operations.

In Japan the fisheries are provided financial assistance through:

(a) Fisheries Finance Corporation, based on the Agriculture Forestry and Fisheries Corporation Law.

(b) Cooperative Finance System through Federation of Credit Fishermen's Cooperatives.

(c) Fisheries Credit Fund enacted in accordance with the Medium Fisheries Finance Guarantee Law.

The Fisheries Finance Corporation provide funds for fishing port development, fishing vessels, equipment for fishing and preservation. Almost all fishermen excepting those employed in large fishing companies are members of fishermen's cooperatives by area and take advantage of the credit provided by the cooperatives. Nearly all the prefectural finances are intended to expedite the development of coastal fisheries and to supplement governmental subsidies and finance. Many prefectures subsidise the interest payable by institutions like cooperative societies for loans granted for the modernisation of equipments, the improvement of fishermen's management, relief for poor catch and natural disaster, promotion of distribution and processing and the practical application of medium and small coastal fisheries finance guarantee system.

While playing a great role in modernisation of the fisheries, management, the present system of financing cannot meet all the requirements of the fishing industry. Consequently, many fishermen and fishery enterprises rely on borrowing from city banks on their personal credit for maintaining or expanding their management.

Large fishing companies (capitalised at Yen 100 million or over) are making use of the Japan Development Bank which was established by the Government for the purpose of developing the nation's industries. They have increased in number in recent years. Twenty-six companies were registered in 1967. Of the 26 companies, most of the firms capitalised at less than 1 billion Yen are operating a few units of purse seiners, tuna long liners but companies capitalised at more than 1 billion

Yen are engaged in various types of fisheries, such as mothership type salmon fisheries and mothership crab fisheries, whaling, trawling and pelagic trawling. They are also engaged in the operation of cold storages, freezing, processing and trading or commerce. These firms are operating more as integrated food companies. They are contributing to the progress of the Japanese fishery industries by exploring various marine resources in distant waters which are difficult to be undertaken by the small and medium scale fisheries.

In spite of the great progress on modernisation of fishing industry in Japan, this industry is very vulnerable to natural conditions and to ensure stable management, the fishery enterprises are interested in various insurance schemes. For boat accidents compensations are being made by Boat Insurance Association (Mutual Relief Organisations for the purpose of stabilising their management. For a decline in the catch value, loss of fish, shell fish and sea weeds in culture or damages to fishing gear and culture facilities caused by natural calamities and unavoidable causes, compensations are also being made with State subsidies by the Japan Federation of Fisheries Mutual Relief Association established in 1954 with the membership of fisheries cooperatives and prefectural and national federations. All the fishermen (crew) of fishing vessels of 200 tonnes and over are subject to seamen's insurance covering accidents of both the insured and their family. The mandatory workers accident insurance is applied to the fishery enterprise for the accidents or disease of fishermen on duty on board vessels of 5 tonnes and above. In addition fishery companies affiliate themselves voluntarily with the various other insurance companies.

South Korea. In South Korea the governmental assistance to fisheries is administered through the Department of fisheries for deep sea fishing culture of fish, new installations, expansion and improvement of the processing and distribution facilities for marine products, improvement of fishing boats and gear, building and repair of fishing boats, fishing port facilities, and training.

The Government of South Korea provides loan amount equal to 70 per cent of the cost of vessels upto 15 tonnes.

Korean Development Finance Corporation, the first institutional source for long term industrial finance in Korea was established in 1967 under the sponsorship of the Federation of Korea industries with advice from International Finance Corporation. This Corporation is to assist primarily the manufacturing and processing industries and will give priority to investments in export and import (subsidiesed) industries.

The International Finance Corporation was permitted in 1965 to expand its activities for making investment without government guarantees in production by private enterprise and stimulating the international flow of private capital and rendering assistance to less developed countries in the growth of their capital markets.

The investment potential* in the fishing industry of Korea has to be phased by taking into consideration the requirements of the fishing industries of South East Asian countries. It is particularly important in connection with investment in Tuna Fishing vessels where additional catching capacity would only increase the pressure on the already fully exploited resources. The emphasis had been laid on the development by companies of experienced and trained crew.

W.P. Appleyard Note on Fisneries Investment in the Republic of Korea, International Conference on Investment on Fisheries, FAO, 1969.

The Government Fishing Company (Korea Marine Industry Development Corporation) operates a fleet of 70 tuna long liners in addition to 110 tuna vessels operated by private companies. Even though the private sector was reasonably successful for sometime, it has not been found satisfactory during the last one year.

In looking at the tuna resources the best opportunities seem to be in skipjack fishing with greater emphasis on pole and line fishing. However, the problems of provision of live bait are tremendous. Korea has a project under consideration for establishment of a fish processing factory at Masan for 20,000 tonnes of tuna with attendant facilities for cold storage with an investment of about $ 10 million. A loan from the Asian Development Bank of $ 7 million to Korea Cold Storage Company will finance the building of 4 marine processing factories with marketing facilities in Seoul.

Taiwan. In Taiwan the primary factor accounting for the rapid expansion in fish production in recent years should be attributed to the big loan funds provided by the Government for the construction of fishing boats. The sources of these loans operated by the Government were mostly from the American Aid Funds. From 1952 to 1961 the total tonnage of power fishing boats increased from 27,000 tonnes to 83,000 tonnes. In 1958 a plan for concentrated utilisation of capital for the exploitation of marine resources was passed by the provincial government and in that year alone the total tonnage of power fishing boats increased by 12,000 tonnes.

For the development of deep sea fisheries and the expansion of fish exports, an American Aid loan project was prepared in 1963 for the construction of 10 wooden hull deep sea tuna long line fishing vessels of 145 tonnes class. A contract was completed in September 1963 with the IBRD for a loan of $ 7.8 million for the building of 13 fishing vessels of 300 tonnes class and 3 vessels of 1,400 class. All these vessels were launched before the end of 1965. A second IBRD loan of $ 14.4 million was secured in 1966 for the construction of 4 deep sea trawlers of 1,500 tons class and 20 deep sea tuna long liners of 250 tons class. A loan from the Sino-American Fund for Economic and Social Development was approved for construction of 30 deep sea long liners within 2 years. In addition 137 deep sea fishing boats of about 80 tons class were being constructed for private investors with or without Government Bank loans. Permission was also given for the purchase of Japanese tuna long liners upto 4,500 tonnes in good operation condition.

Hong Kong. The Government of Hong Kong has provided in 1969 a sum of HK $ 3.5 million for construction of small fishing vessels and HK $ 5 million for large vessels for issue in the form of loans at 6 per cent interest payable over a period of 10 years. The Fishermen's Cooperative Society administers these loan finances and the repayment of the loan is on the basis of the fish catch, which has to be marketed through fish marketing organisations. The society also functions as a bank with regard to the amount realised by the members through the sale of fish.

For the construction of fishing vessels, fishing comapnies are given loans and other facilities at concessional rates. The fishermen get assistance towards operational expenditure for the first year and also the expenditure on maintenance of the boat. Fishing equipment is provided duty free. Besides the loans financed by the government, there is considerable investment of private capital in fishing vessels.

Singapore. The Development Bank of Singapore was established in December 1968 with a paid-up capital of US $ 32.7 million (Singapore $ 100 million) with a view to promoting development of industries including fisheries.

For improving the investment climate in the country the Government had introduced a measure in Austust 1968 exempting non-residents from taxes payable on interest on the deposits in the local banks. Besides for augmenting financial sources available for development of industries, loans and credit facilities from German Credit Bank, Asian Development Bank and the World Bank are being arranged.

Indonesia. The plans for the development of fisheries by the creation of integrated fishery complex in Indonesia require substantial foreign assistance to meet capital and entrapreneurship requirements. The government allocations from the development budget will be confined to creation of infra-structure facilities for fisheries*.

Under the Foreign Investment Law enacted in 1967 substantial tax advantages are offered to private foreign enterprise to invest in developing Indonesian fishery resources and establishing interest and encouragement to the domestic investment law. Investment permite were granted for 84 projects including fisheries in 1968 under the Foreign Investment projects in the fishery industry foreign investment projects in the fishing industry have been approved by the government of Indonesia and they relate to catching processing and distribution facilities. Of the six investors, three are Japanese with the capital investment of US $ 5.5 million. The other three are from Norway, Kuwait and Philippines.

---

*Fishery Investment in Indonesia, 1969 International Conference on Investment in Fisheries, FAO, Rome, 1969.

. In addition to these tax exemptions, relief is also granted from the payment of capital stamp taxes, import duties on plants and equipment and inventory requisites to be procured from abroad for new projects.

Ceylon. In 1958 the Government of Ceylon introduced a loan scheme for the supply of mechanised fishing boats of fishermen on hire purchase - a sum of ₨ 17,500 per boat repayable in five years at 6 per cent interest. The Government* also provide loans for issue of out board marine engines for the fisheries. So far 1,926 mechanised boats, 2,367 marine engines and 4,049 out board engines have been issued to the fishermen under these schemes.

The Government established the Ceylon Fisheries Corporation in 1964 with a view to undertaking:

---

* An outline of the fishery Industry in Ceylon International Conference on Investment in Fisheries, FAO, Rome, 1969.

(a) Production of fish and fish processing,

(b) Wholesale and retail marketing of fish,

(c) Construction and maintenance of fisheries harbours and shore installations,

(d) Import and sale of gear and tackle, and

(e) Construction of boats for the fishing industry together with repair and maintenance facilities.

To support the expansion of the deep sea fishing fleet, the Ceylon Fisheries Corporation initiated a programme for the construction of eight new harbours in 1966. A fishery harbour was built in Colombo with the assistance of the Government of Canada. A major harbour designed specifically to cater to tuna boats and large trawlers is being built at Galle on contract by Promopeche of France, for exploiting the tuna resources available within a range of 800 kms of the Southern Coast.

Pakistan. Pakistan envisages a higher level of capital investment* in its fisheries by offering attractive incentives to private enterprise and by organising joint ventures.

Credit facilities have been made available to bonafide fishermen and fish processors in rural and urban areas by banks, cooperative societies and other Government controlled institutions. During the last five years a sum of Rs 25.5 million has been advanced by the following financial agencies:

---

* Capital Investment in the fisheries of Pakistan, International Conference on Investment in Fisheries, FAO, Rome, 1969.

(a) Agriculture and Development Bank of Pakistan
(b) Pakistan Industrial Credit and Investment Corporation
(c) National Bank of Pakistan
(d) Industrial Development Bank of Pakistan
(e) Standard Bank Ltd
(f) Agricultural Development Corporation
(g) Fishermen's Cooperative Society, Karachi

Agricultural Development Bank, Pakistan, has been advancing loans for the fishing industry depending on the nature of security and the importance of the scheme. The bank charges an interest of 7 per cent for seven years and 6 per cent on long term loans.

The Pakistan Industrial Credit and Investment Corporation Ltd established in 1957 finances projects costing more than Rs 1.5 million. This agency has financed two fish processing plants at 6½ per cent. Industrial Development Bank of Pakistan makes credit available upto a maximum of Rs 2.5 million at a time with foreign exchange component of Rs 1.5 million.

There are a number of private institutions, which advance loans to fishermen. These institutions advance loans of about Rs 20 million every year.

The Government of Pakistan have created monetary incentives for fishermen, fish traders, exporters and processors with the primary object of accelerating the inflow of private capital investment in the fisheries of the country. These concessions and benefits relate to:

(a) Export bonus for fishery products
(b) Tax holiday for five years for processing plants
(c) Income tax exemptions for fishermen
(d) Exemption from customs duty and sales taxes on the import of fishing equipment.

During the Fourth Five Year Plan 1970-75, capital requirements have been estimated in both public and private sectors to the extent Rs 135 million. This includes investment on the following:

(a) Fish Processing Plants: Rs 10 million
(b) Fishing Fleet: Rs 15 million
(c) High Sea tuna fisheries: Rs 15 million

In view of the possibility of developing deep sea fisheries, private enterprise is expected to enter this field in participation with foreign investors.

The problems faced by the fishing industry of Pakistan as listed below are similar to those faced by India:

(a) A high degree of unutilised capacity of processing plants;

(b) Lack of reefer space in ships for export of frozen products;

(c) High ocean freight charges;

(d) Lack of foreign investment on account of restrictive policy of the Government;

(e) Lack of foreign exchange inhibiting the development of processing units;

(f) Lack of fishing equipment on account of restrictive import licence policy; and

(g) Inadequacy of harbour facilities.

However, liberal financial assistance made available for the development of fisheries in this country and various incentives provided for the promotion of exports of marine products considerably help the industry to compete in the international markets.

Latin America. Fisheries are classified in four categories, is indicated below, for the purpose of giving in Latin America.*

---

* Some observations on capital requirements for fisheries development in Latin America. International Conference on Investment in Fisheries, FAO, Rome, 1969.

(a) Export oriented industries with dynamic development characteristics;

(b) Industries mainly supplying domestic markets;

(c) Relatively stagnant industries; and

(d) Sub-marginal industries of the traditional character.

Investments on fishmeal production in Peru and Chile have grown more rapidly than elsewhere in the world. The development was financed largely to provide investments with significant participation of foreign resources. Credit facilities have been liberally granted by supported schemes (estimated) upto US $ 200 million in 1968 in Peru. When these industries of Peru and Chile faced serious problems of adjustments on account of fall in demand in 1960s they were assisted by short term and long term credits.

In other export-oriented industries like shrimp and frozen fish, foreign investors were attracted into the shrimp and tuna industry from the very beginning in Latin America. Local capital was also provided for increasing the pace and intensify the development of this industry. Private capital is likely to continue to flow into both the shrimp and frozen fish sectors, if expansion in the export markets proceeds according to the past trends.

Credit for current operations can be obtained largely from national sources. International financing is justified for large scale undertakings to take advantage of rapidly growing opportunities in export markets. Financial assistance or government sponsored scheme is justified to promote consolidation of the shrimp industry where over expansion has taken place and diversification into other operations appears to be desirable. International financing is sought particularly for capital investment in infrastructure facilities such as harbour, fish terminals and wholesale andretail markets.

North America

USA. In USA, the Fish and Wildlife Act of 1956 provided for the establishment of a revolving fund to be used for giving loans for financing and refinancing fishing operations and for the maintenance, replacement, repair and equipment of fishing gear and vessels. These loans are repayable in instalments with a maximum maturity of 10 years on an interest of 5 per cent per annum. The loans made under this Act are subject to the following restrictions:

(a) The interest rate shall not be less than 3 per cent per annum.

(b) Maturity shall not be more than 10 years.

(c) No financial assistance shall be extended unless reasonable financial assistance applied is not otherwise available on reasonable terms.

The reasons which led to these provisions are:

(a) Shrimp vessels are large steel boats, the construction of which involves a substantial investment and they are equipped with modern navigation equipment including radio, fish finders, etc;

(b) The experience of Commercial Banks with the financing of shrimp vessels has been good;

(c) There is distinct need for reconditioning vessels in many instances; and

(d) Modernisation of the fleet is considered to be in the national interest.

Although few vessel owners seem to have taken advantage of the provision under this Act mainly because of the procedural delays in obtaining a guarantee from the Maritime administration, this decision resulted in some of the suppliers of ships as well as the commercial banks adopting a five-year repayment plan on loans for shrimp vessels as against a five-year repayment plan.

Most vessel loans in the Gulf States are secured by preferred mortage which is registered at the Customs House where the boat is registered. Vessels on which loans are given must be covered by full marine insurance. They must also be covered by protection and indemnity policy. Part of the loan is, therefore, often used not only for the acquisition of the vessel but also for the first year's insurance payments. The reasons for some of the banks not extending long credits earlier were on account of the fact that they could allow only part of the deposits to be used for long term loans.

Financing of individual shrimp vessel is done primarily through commercial banks at 7 to 8 per cent interest depending on the individual cases. Some operators had obtained five year loans at 6 to 8 per cent interest. Loan arrangements vary from locality to locality to some extent.

The programme of building modern fishing fleet in US ran into difficulties under the existing laws on registration of fishing vessels and on the landings of fish in US ports. These laws effectively prevent US fishermen from taking advantage of lower construction costs of the foreign shipyard. The vessel Construction Subsidy Act which was enacted in place of the Registration of Fishing Vessels Act had not achieved its objective because the need for provision of freezing facilities and for repairing obsolete vessels, had added new problems for the fisheries which were already heavily over-burdened.

The 1963 Federal Law prohibits the purchase of US fishing vessels from other countries. However, the US built vessels, approximately twice as costly as those constructed in foreign shipbuilding yards impose considerable burden on the US fishing industry. The 1969 ACT recommending legislative changes in 1964 Fishing Fleet Improvement Act promotes the optimum use of Government funds in achieving economic development of the fisheries, leading to a judicious control of capital flow into selected fisheries where the cost of construction of fishing vessels in United States is considerably high and thus resulting in a disadvantage to the US fishermen.

Canada. In Canada, recognising the importance of fisheries in their national economy, the Provincial Department of Fisheries given financial assistance to the fishermen. One of the regular statutory functions of the Department of Fisheries in Canada is to operate the fishermen's loan programme. For instance, in Nova Scotia this loan is operated under the Fisheries Loan Act of Nova Scotia 1967, to cover the entire cost of construction of the hull and purchase of engines and gear on the following conditions:

(a) The construction of the boat should be based on approved specifications.

(b) The applicants should furnish an agreement in the prescribed form to serve for five years along with an undertaking to repay the loan within the prescribed period on regular half yearly instalments.

On steel fishing boats, the Federal Government gives a subsidy of 35 per cent, while on the wooden boats the Provincial Departments give a subsidy of 40 per cent, if the overall length is less than 40 feet. The rate of interest charged is 6½ per cent on the loan amount for boats for which no subsidy is given. In 1968 a sum of Canadian $ 30 million was spent towards loans under this programme.

The Provincial Department give a guarantee of a minimum price to the fisherman and boat owners for their catch based on the average price of the last three years.

Fisheries Development Act was promulgated in 1966 for the more efficient exploitation of fishery resources and for the exploration and development of new fishery resources, for introduction of new designs of fishing vessels and equipment and for the development of new fishery products and improvement in the handling, processing and distribution of fishery products. Financial assistance could be given for the construction equipment or modification of commercial cold storages and for construction of fishing vessels.

The government investment assistance relates to:

(a) Incentives

(b) Direct government investment confined mostly to public utilities for performing essential services, new industrial ventures for attracting private enterprise, ship repair and servicing facilities etc.*

(c) Grants to private sector for purposes of capital investment such as building a fishing vessel.

(d) A New Foundland fisherman building a fishing vessel could obtain grant for about 3 quarters of the cost and loan for more than half of the remainder. The subsidy programme is more generous in New Foundland than anywhere else in Canada.

The ship construction assistance regulations introduced in 1961 provided for a subsidy of 50 per cent in the construction of steel fishing vessels of 100 GRT and over and also for a 25 per cent subsidy in the construction of wooden fishing vessels of the same size.

---

* (Government policy and investment in the fishing industry of New Foundland Bp/36, International Conference on Investment in Fisheries, FAO, 1969.

These were obviously designed primarily to support the Canadian Shipbuilding Industry in the face of competition from low cost producers abroad. The higher rate on fishing trawlers may imply a greater margin of subsidy than necessary, to keep foreign competition out:

(a) Investment in infrastructure such as marine works, docks, break waters, harbour facilities etc.

(b) Loans, incentives and other assistance for commercial operations like fishing vessels processing plants etc.

The subsidy given by the Government is in the form of low rate of interest for the loans furnished by the State Fishery Bank and other Banks. The financial assistance is operated also under schemes for replacement of engines and hulls. Subsidies are also given to reduce the prices of equipment and boats for fishermen. The subsidies are granted both for the imported and locally produced gear according to the established rules for the purpose of reducing prices to fishermen. The Government also plans to give subsidies to increase fishermen's income by keeping the price of herring, cod, and other species of white fish on a certain level and secure a minimum income for the fishermen.

Europe

Norway. The Fishery Bank of Norway with its head office at Bergen with numerous branches caters solely to the needs of the fishery industry. The board includes members of Parliament, members of the industry recommended by the Norwegian Fishermen's Organisation and the Director of Fisheries who acts in an advisory capacity.

The fishermen in Norway have always found it difficult to raise capital for the acquisition of fishing craft, gear, etc. through private credit institutions, which in many coastal districts of Northern Norway are inadequate. The State Fishery Bank, therefore, functions as a specialised credit institution, to help the fishermen in financing their capital needs in order to stimulate an adequate and effective development of the fleet and to promote the progress of the fishing industry.

The Bank grants loans for investment purposes, such as:

(a) Building of new vessels
(b) Purchase of second hand vessels
(c) Conversion and repair of hull and machinery
(d) Purchase of new and second hand engines
(e) Purchase of equipment such as gear, electronic equipment and other auxiliary machinery.

The loans provide for about 80 per cent of all registered steel vessels, to act as incentive to fishermen for investment in large vessels as also for conversion and improvement of the fishing craft.

The bank may grant loans to any person who wishes to build or buy a fishing vessel against mortgage. However, a special Act empowers the Director of Fisheries to decide as to who may acquire the ownership of fishing vessels. As marketing of all catches takes place through the sales organisation, the fishermen are bound to deliver the catches to that organisation. The recovery of loans is, therefore, not a problem, as the Act gives the bank authority to secure a percentage of the borrowers' gross earnings from the catch through a power of attorney issued by the borrower.

The loan schemes are provided under first, second and third mortage loans. All loans made on first mortgage and for the acquisition and improvement of vessels, engines, technical equipment and gear and loans to the processing industry have now legal bases in the State Fishery Bank Act of 1948. According to this Act, the necessary funds for credit and extension have to be provided by the bank itself by issuing bonds or by other loan operations in the open market. The Bank may raise capital for credit extension within a limit of 10 times of its capital.

The second mortgage loans can be obtained from a fund, the capital of which has been allocated by the Ministry of Finance to the State Fishery Bank. The rules for the operation of the Bank are laid down by a Royal decree. This fund is a revolving fund and the loans are given in addition to and on top of ordinary first mortgage loans. Loans under this arrangement can be obtained only when the State Fishery Bank has given its mortgage.

Special third mortgage loans may also be obtained. These loans are given to specially qualified young fishermen. The rules for this loan scheme are laid down by the Ministry of Fisheries. The conditions of loans are clearly spelt out along with the amount, period of repayment, interest and the scope of loans.

The special third mortage loan scheme is kept separate from the bank encouragement in regard to first and second mortgage loans and it does not affect the banks profit and loss account.

The Parliament decided to open maximum new credit expansion of the bank from ordinary first and second mortgage loans. From 1966 onwards the maximum limit has been N.Kr. 100 million a year but in 1969 the limit is N.Kr. 90 million. The Ministry of Fisheries give the Bank each year a kind of recommendation indicating the objectives for which the credit should or should not be given to promote the Government's policy.

The Ordinary loans for vessels and processing industry from the State Fishery Bank include an element of subsidy or financial support. The rate of interest is less than that in the open market. The low rate of interest for loans for vessels and the equipment, and for loss to the processing industry, involves a net government expenditure. This expenditure is normally about 3 per cent of the outstanding amounts. The same element of financial support is inclined in the loans given by the State Industry Bank to the processing industry. The new credit extension from these loans amounted in 1968 to N.Kr. 5 million.

Loans and guarantees for loans are given by the regional development fund, which is charged with the general development of industries in districts with special employment problems or in districts which are poorly developed. The fund had chiefly contributed to financing of large sea going vessels which in the opinion of the fund are able to land comparatively larger quantities of fish and contribute to increase the supplies to the processing industry. With regard to the processing industry the fund had chiefly supported plants aiming at rationalisation and modernisation of existing plants as well as plants for advanced product development. A sum of N.Kr. 16.12 million was given as loans and guarantees for loans by private lenders were given to the extent of N.Kr. 23.73 million. The rate of interest on these loans varies between 4 to 5 per cent. The period of repayment varies between 10 to 15 years for fishing vessels and processing plants.

The subsidy element by the government is in the form of low rate of interest to the loans furnished by the Fishery Bank and other Banks.

On the basis of the agreement of 5th June, 1969 between the Ministry of Fisheries and the Fisheries Organisation (Nonges Fiskarlag), two schemes are now in operation:

(a) Vessels of 30' or longer may obtain scrapping subsidies when engines are totally damaged or where the hull of wooden vessels is damaged by dry rot. The rules are laid down by the Ministry of Fisheries in 1968.

(b) Fishermen may obtain upto 15 per cent of the cost of new engine of the same type as the damaged one and N.Kr. 100 per grt of the vessel.

The amount provided in 1968 was N.Kr. 200,000 as subsidies under this scheme. The Government's expenditure on the two schemes is estimated to about to N.Kr. 10 million between first June, 1969 and 31st May, 1970.

In addition, subsidies are given to reduce the price of equipment and bait for fishermen. The subsidies are granted to a public body called Statens Fiskeredskapsimport (the State monopoly for imports of fishing gear). Subsidies are granted both to imported and locally produced gear according to established rules for the purposes of reducing prices to fishermen. The subsidy is about 20 per cent of the cost of the equipment. A sum of N.Kr. 25.18 million was given in 1968.

The Government also plans to give subsidies to increase fishermen's income by keeping the price of herring, cod and other species of white fish on a certain level and also to secure a minimum income for the fishermen and their families, in case the fishing fails wholely or partly. The guarantee for a minimum weekly earning is given under the state unemployment insurance system and regarded as a social policy. A minimum of N.Kr. 175 per week is granted.

Netherlands. In Netherlands a special credit system* is in force to facilitate efforts of improving the economic structure and productivity of the fishing industry.. Loans granted by the National Investment Bank for investment in fixed assets for use in income production are partially granted by the Government. In Netherlands banks never invest in share capital of fishery projects. The factors influencing the banks appraisal whether or not a project is worthy of consideration are:

---

*"Financing Facilities in the Netherlands for Domestic and Overseas Investments in Fisheries", International Conference on Investment in Fisheries, FAO, Rome, 1969.

(a) Competence and character of the applicant;
(b) Financial position of the applicant;
(c) Estimate of costs and earnings of the project;
(d) Composition of the financing scheme and
(e) Security available to cover the bank risks.

The possibilities of institutional finance for investment by companies from Netherlands in developing countries relate to:

(a) Loans granted by the Netherlands Investment Bank;
(b) Private financing credits under government guarantee;
(c) Re-insurance of investment in developing countries; and
(d) New financing institutions.

In Netherlands, the loan guarantees for new vessels apply to loans granted by private banks on commission terms, for stimulating financing in the fishing industry and do not affect the productivity of investment. Loan guarantees are also given to shrimp fishermen to improve their equipment, as also for investment in the fish processing industry.

Spain. In Spain the ship building yards specialise in the construction of stern trawlers, freezer trawlers, purse-seines and shrimp trawlers. In view of the increasing demand for shrimp trawlers of sizes above 70', the Government of Spain have encouraged the ship building yards to supply ships on deferred payment system over a period of seven years at an interest rate of 5 to 7 per cent. The Government guarantees the payment of the cost of fishing vessels.

When orders are received by the ship building yards they enter into an agreement with the Government toget a guarantee of payment of the cost in Spanish currency on delivery of the vessels. The foreign exchange paid by the companies who place orders go into the account of the government. There is an arrangement in Spain by which 3 or 4 trained fishermen, including skippers and master fishermen can be hired on contract for a period of 2 years. This system helps the importer to get his men trained on the vessel within the period of 2 years. Under this system, Spain had delivered quite a good number of shrimp trawlers to Central and South American countries. It was reported that recently they had received an order for 100 shrimp trawlers to be supplied to some of the Central American countries.

United Kingdom. In United Kingdom, in view of the stagnation of fish landings since 1965, the White Fish Authority encourages investment in fishing vessels for augmenting catches by making available grants upto 40 per cent of the cost of building vessels below 24.2 metres in length and 33 per cent on vessels above 24 metres.

In UK operational subsidies are substantial. From 1962 to 1967 subsidies were made available to operating vessels (between 24.2^m and 32^m at the rate of £ 9 per day whil at sea; vessels between 32^m and 42.1^m at £ 15 per day at sea. It was envisaged that the vessels would spend more time at sea resulting in larger catches and that with the increase in earnings the subsidies would be reduced by 7½ to 12 per cent in successive years.

A scheme introduced in 1969 provided for the payment of grants for owners and charters of fishing vessels registered in United Kingdom and will remain in force till 31st July, 1971. The grants payable are to be calculated with reference to fishing during specified periods. The total amount of grant in a year will be calculated on the basis of the operating profits of all vessels under the scheme. A grant of £ 2 million will be increased by 50 per cent in any one year, if the profits fall short of the basic minimum.

In August, 1969 the white fish and herring subsidies were introduced:

(a) for vessels between 10.6 m (35 feet) and 18.2 m (60 feet) in length;
(b) vessels between 18.2 m (60 feet) and 25.1 m (80 feet) in length.

The rates of grant per stone of fish varies from 4 d to 11 d with regard to white fish and 22 sh. per cran for herring.

The White Fish Authority constituted in 1951 is empowered to raise a general levy from the industry, not exceeding a sum of 2 d for every stone of white fish landed in UK. Financial assistance is made available to the Authority for making grants for the construction of new vessels and improvement of existing ones. Financial assistance is also given towards the cost of research activity and the establishment of processing plants. Grants are also provided for specialised training of candidates employed in the industry.

In 1963, the White Fish Authority established an industrial development unit at Hull as the main instrument for carrying out their development programmes. This unit works closely with ship builders and manufacturers of fishing equipment. The Authority is also attempting to find ways of popularising species of fish which do not normally appear on the market.

The Herring Industry Board was set up under the Herring Industry Act, 1935 to reorganise, develop and regulate the industry. Under the Herring Industry Act, 1935 and 1957 and the Herring Industry Act of 1951, the Board was empowered to engage directly in the herring industry, to provide vessels, gear and stores, to operate schemes for the purchase and disposal of fresh or cured herring and to engage in research experiment and market development. The Board has powers to regulate fishing, processing and sale and export of this fish as also to fix minimum prices and make grants and loans for the consideration or improvement of fishing vessels and processing plants.

The Board imposes a levy in respect of first sales of fresh herring landed in UK, to finance its own operations.

West Germany. The Government of West Germany believes that active support by private initiative and private capital from the industrial countries is essential for the growth of sound national economies in the developing countries. It encourages capital expenditure by private enterprise in developing countries by providing favourable conditions for foreign investment. The incentives for private investment in developing countries considered by the Government of West Germany include*:

a) treaties with developing countries concerning encouragement and protection of private investments;

b) providing governmental guarantees of investments against political risks;

c) guaranteeing tax concessions to investors in the years that affect their investments, thus enabling them to finance about one-third of the capital;

d) giving favourable tax treatment of income from investments in developing countries - with particular reference to avoidance of double taxation;

e) granting loans on favourable terms;

f) providing equity capital for new investments and capital expenditure for purposes of expansion by the German Corporation for Economic Cooperation; and

---

*German measures for promoting private investments in developing countries, International Conference on Investment in Fisheries, FAO, Rome, 1969.

g) meeting information on developing countries and for carrying out investment studies.

The tax concessions introduced in the Development Assistance Tax Law of 23rd December, 1963 provide for:

a) permission to value capital investments in developing countries on the basis of upto 15 per cent less than the cost of acquisition;

b) permission to allocate profits upto 50 per cent depreciated acquisition; and

c) waiver of the obligation to declare and pay taxes on undisclosed reserves in the case of capital investments in developing countries.

The Federal Government grants capital investment loans at 6 per cent per annum, maturing upto twelve years, including four free years.

Governmental Assistance to Fishing Industry in Asia, Europe and Americas

In most developed countries with important fishing industries public credit is made available to industry. In developing countries the fishing industry finds it difficult to raise sufficient investment capital. Export-oriented fisheries with broad world markets have proved to be safe and profitable for private investors than fisheries for which new domestic markets are to be developed. Finance and credit are made available in different ways in different countries according to the structure and needs of the industry.

In USA, finance for the fishing industry is largely available from the private commercial banks but the Government under the Fish Wildlife Act of 1956 provide financial assistance for the construction of fishing boats under the Fishing Vessels Construction Differential Subsidy programme.

In Canada, the Government provides loans and subsidies under the Fisheries Loan Act. In United Kingdom financial assistance is extended through White Fish Authority and Herring Industry Board and in Ireland through the Irish Sea Fish Board. In Norway and Iceland there are special Fisheries Banks, catering solely to the needs of the fishing industry.

In Latin America the Governments provide necessary finances and incentives and also encourage joint ventures with foreign investors for the industry. Japan Development Bank and other commercial banks provide loans at low rates of interest. Special facilities are provided for boat insurance and other assistance to the fisheries cooperatives. In Korea finance for fisheries is provided by the Government through the Department of Fisheries, Korean Development Finance Corporation and Asian Development Banks. In Taiwan funds are made available under the American Aid Loan Project and IBRD. In Singapore Asian Development Bank and IBRD have contributed to the investment in fisheries. In Ceylon and Philippines

Fisheries Corporation and Fisheries Industrial Development Corporation are provided with powers for financing the fishing industry. Thailand has taken advantage of the offer of financial assistance through the Asian Development Bank. In Pakistan, financial assistance is provided through Industrial Development Bank of Pakistan, Pakistan Industrial Credit and Incentive Corporation and Agricultural Development Corporation.

Besides the grant of loans and subsidies for the development of fisheries, special incentives, tax exemptions, encouragement for foreign participation etc. are provided in various countries for accelerating the development of fisheries.

A two year tax relief period is granted by Malaysian Government for "Pioneer Company". The Government of Singapore introduced a measure in Austust, 1968 exempting non-residents from tax payable on interest earned on their deposits in the local bank. Indonesia, under the Foreign Investment has enacted in 1967 provides substantial tax advantages to private foreign companies to convert in developing Indonesian Fishery resources. Exemptions are also granted from import duties on plants and equipment and inventory requisites to be procured from abroad for new projects. The Government of Philippines encourage joint ventures on fishery projects under favourable terms. Loans for large fishing vessels are issued in Hong Kong at 6 per cent interest payable over a period of ten years and the marketing of fish is arranged through the marketing organisations who watch the repayment of loans.

The financial assistance also takes the form of granting tax relief in the form of duty free diesel oil, tax holiday for a period of five years for establishment of new industries or expansion of the existing industries at a cost not less than Rs 500,000, exemption from income tax for foreign technicians for a period of two years, and reduced rate of interest on loan for capital items of equipment, machinery and fishing vessels.

Lessons for India

In India, the Government provides capital to the fishermen's cooperatives in the form of long term and/ or short-term loans for the purchase of fishing equipment. The finances for the shrimp industry have however all come from the commercial banks and the private operators. There has been very little investment by Government or foreign parties or monetary assistance from the Industrial Finance Institutions sponsored by the Government. Even the commercial banks have been reluctant till recently to advance funds for the acquisition of fishing vessels and other capital equipment on working capital.

As the programme for the rapid growth of Indian fisheries will require establishment of large integrated projects dealing with deep sea fishing and export of fish products, it would involve considerable expenditure and the necessary finance will have to be found. Institutional finance and foreign participation in capital and equipment will have to be sought. In order to enable the industry to compete with advanced countries in the world markets, it will be necessary to reduce the burden of the high cost of fishing vessels and equipment in India by grant of subsidies for large trawlers, processing plants and exemptions of fuel oil from excise duty. Guarantees will have to be furnished to foreign suppliers of vessels and machinery for those who are prepared to extent credit. In view of the prospects of substantial exports, a scheme for waiving of customs duty and drawback of excise taxes will have to be worked out and implemented expeditiously.

Unlike in some of the developing countries there are no fishery banks in India or other institutions exclusively devoted to the financing of the fishing industry. The Reserve

Bank of India has recently started supporting the fishing industry. The Industrial Development Bank of India is now prepared to rediscount and refinance for procurement of fishing trawlers and processing plants on certain conditions. The Agricultural Refinance Corporation is prepared to help the cooperative and the private sector for purchase of machinery and finance projects covering the different aspects of the fishing industry. Commercial banks are now prepared to advance loans to the fishing industry as also the Industrial Finance Corporation and Industrial Development Corporation.

The Government's role in financing the fishery industry will be intial financing of capital-intensive operations. The Government should provide fishing harbours, landing places, slipways, etc. Government should also subsidise and finance deep sea fishing vessels and allow import of fishing vessels on easy payment terms.

It is generally expected that there is vast scope for the expansion of Indian fisheries and the need for foreign investment consequently is urgent. Based on the experience of other countries, such an investment could be either in the field of (a) fishing, processing and marketing or (b) manufacture of equipment for the development of the industry. Foreign investment will help expand the fisheries by the introduction of modern machinery and techniques.

There are opportunities for both domestic and foreign investment in India. Foreign investment on commercial lines could be by direct participation in the equity capital of Indian enterprise, or by supply of capital equipment and technicians. The value of the capital equipment supply can, if so desired, be considered as part of the investment in equity capital of the enterprise. The Government should also permit the supply of plant and machinery by foreign parties on a long term credit basis, and the payment from the Indian side can be effected through the foreign exchange earned by the sale of products in the concerned overseas markets. The foreign investor can also take up the agency for the sale of such goods along with permission and facilities for exempting salaries and profits otherwise subject to the normal tax rules. The Government of India has laid down rules regulating the mode of transferring funds which accrue to foreign investors and also for providing tax concessions, of which the following are of particular interest:

(a) There are reciprocal arrangements for relief of double taxation between India and certain countries. Negotiations for such agreements are at present under way with the USA. France, the UAR (Egypt) and Belgium.

(b) New Industrial undertakings enjoy tax reduction in the first five years of operations.

(c) Fees for technical services rendered are taxed at concessional rates after deducting any expenditure incurred. This also applies to income from royalties, and in specified cases to the salaries of foreign technicians.

(d) Where agreements provide for the allotment of shares to the foreign collaborator, in the joint ventures in consideration of the supply of machinery, the use of patent rights, etc., there is no requirement to include the profit made in such a transaction in taxable income in India.

In view of these provisions, it would be possible to encourage formation of large fishing enterprises and joint ventures especially for exploitation off-shore and deep sea fishery resources. However, the term 'technical services' at present does not include master fishermen, fishing skippers, fishery engineers and fishery technologists whose employment would facilitate the operations of such enterprises and training of Indian personnel.

4.4 Joint Ventures for Fishing Industry

The fishing industry in developing countries, as mentioned earlier, finds it difficult to raise adequate investment capital, obtain skilled fishermen and provide training for the manpower. The private investors can be attracted to a limited extent and that too where the export prospects for fishery products exist. The most suitable mode of attracting domestic and foreign investment in the fisheries of developing countries is undoubtedly through joint collaboration arrangements.

Export-oriented fisheries with growing world markets are usually safer and more profitable for private investors than fisheries for which domestic markets have yet to be developed. The development of these fisheries helps to spread modern techniques and industrial approach to domestic fisheries.

The willingness of overseas investors to evolve in the development of fisheries in the developing countries depends upon not only political considerations, but also economic factors like investment climate, share in the equity capital, local partnership, repatriation of profits, availability of local finance and the fiscal policy of the Government. In addition, the availability of trained personnel locally and scope for employment of foreign technicians are other limiting factors. Supply of fishing vessels, plant, equipment and fuel, etc., at competitive prices and grant of financial incentives can go a long way in promoting joint venture enterprises.

The fishing industry offers excellent opportunities for countries with necessary resource base to develop exports at a faster pace by attracting foreign investment under joint venture arrangements between local and foreign entrepreneurs. Mexico, Nicaragua, Panama, Brazil, Surinam, Malaysia, Indonesia and Australia are some of the countries which have capitalised on their shrimp and tuna resources by entering into joint collaboration arrangements with USA and Japan. A brief resume is given in the following paragraphs.

Mexico. Although the fishing vessels of USA operate in distant and high waters of the Gulf of Mexico and the Caribbean, the domestic demand for shrimps is met partly.

Hence the American operators have been setting up bases in foreign ports with a view to ensuring the supplies of shrimp to the US market. The industrial interests of the maritime countries recognised the importance of the fishing industry and started building up fishing fleet and freezing plants with US financial and managerial backing. One of the first countries to initiate such activities on a commercial scale was Mexico on the Pacific coast in 1942 and on the Gulf Coast in 1945, through the Shrimp Association of America. This group initiated a campaign and brought together producers, packers and distributors of these two countries.

Nicaragua: An American financed fishing unit is in operation at Corinto on the Pacific coast of Nicaragua. Thirty per cent of the stock of this plant is held by the American interests. The shrimp operations for export purposes enjoy concessions granted by the Government. It will be interesting to note that such concessions are given only to commercially viable units with mixed ownership of Nicaragua and foreign companies. These parties under the arrangement may import boats, machinery and equipment etc., duty free. The vessels, however, may remain under their own flag as long as they wish enjoying the concessions allowed. If the owner so desires he may transfer the flag to the Nicaraguan register.

Panama. Shrimp exports from Panama accounted for $ 9.4 million in 1968 and the total investment on plant and equipment stood at $ 25 million. The Panaman Government encourages foreign investment for fisheries development. Initially the shrimp fishery was developed with financial participation from the US business interests. Also, recognising the importance of the industry on the export front, the Panaman Government offers various financial inducements. The operating companies enjoy 25 years' concessions and are exempted from corporate taxes. Foreign investors may operate for shrimp by setting up a Panaman Corporation and there is no restriction as such against employment of foreigners in the organisation.

Brazil. Among the Latin American countries, Brazil which is an important supplier of shrimp to the US market offers attractive incentives for investment in fishing industry. With the small size of the local market, low per capita consumption of fishery products coupled with the abundant fishery resources, the Brazilian fishery industry attracts long-term investment especially from the US with its advanced technology and managerial skills.

Joint ventures in fisheries in Brazil are administered by the superintendent for fishery development (SUDP) as these projects have an important bearing over all investment in the industry. As of 1967, this Agency had approved 29 projects with an estimated cost of $ 10 million in the country. Of the new collaborations approved 50 per cent is for fishing operations and the rest for fish processing. It has been reported that by August, 1968, the Authority sanctioned 90 projects for an overall investment of $ 40 million.

Under the Brazilian new Fishing Law (Decree Law 221 of 28th February, 1967 as amended on 25th March, 1968) the fishing industry is granted various exemptions and investment incentives. According to the provisions of this Law there exists rebate of tax on fuels, including electricity consumption in the preparation of marine products for export. Tax on oil is approximately 10 cents of the total cost of 25 cents per gallon. Special credit facilities for agricultural and related industries, including the fishing industry were extended by the

Central Bank Resolution, 1969. Finance thus is available for the development of fishery industry in Brazil with ease.

Brazil imported eight fishing vessels - one from USA, four from Mexico, one from UK and two from USSR in 1967. The Brazilian Government permitted lately import of fishing boats from Japan, West Germany, Mexico, UK and USSR, however, with certain restrictions such as an indent should be placed for the purchase of one indigenous boat as against three imported. The Bank of Brazil could not enforce the ruling that a firm must place order for one boat from a Brazilian Boat Building Yard for other three imported mainly because of the inability of the Brazilian Yard to construct marine vessels at economical prices, more so shrimp vessels with freezing facilities.

Surinam. A U.S. firm has purchased controlling interests in Surinam Markets Industries Limited (SAIL). The company handles shrimp processing for export. It also acquired all outstanding stock of World Wide Marketeers Ltd. of New York city, SAIL's US importer and producing agency.

The exclusive processing and export rights accorded to SAIL in 1956 will expire on 17th September, 1971. The Government of Surinam has given written assurance to officials of the US firm that the change of management at SAIL will not affect its exclusive rights.

This firm has the benefit of five Japanese trawlers whose catches will be delivered until 1971 for processing and export. There are plans for commissioning more trawlers and setting up of a processing plant to handle the catches of 40 to 60 boats by the end of 1971. Shore facilities are being provided for handling the operations of 120 trawlers which normally go from Barbados and Trinidad for shrimping in the waters of Surinam.

Some of the local interests are looking towards Japan for capital and expertise. At present, of the 52 shrimp trawlers which are operating off Surinam waters 15 are with Japanese flag.

Malaysia. Joint Malaysian and Japanese Tuna Fishing Company was started ten years ago and is now the largest exporter of tuna from the country. This Company, Malayan Marine Industries Ltd., sold US $ 14.5 million worth of frozen and canned tuna to USA, Japan, Italy, West Germany and Canada in 1968. The exports of frozen tuna were of the order of 4,000 tonnes valued at US $ 1.5 million. The tuna vessels of the company are operating in Indian Ocean along with those of South Korea and Taiwan. But, of late, the Company is facing competition in tuna catches on account of the increased activities of fishing vessels from Singapore and Some African countries. In order to check this competition the Company has sought the help of the Malaysian Government.

Indonesia. Indonesia and Japan have agreed upon allowing Japanese vessels to fish in the Banda sea off eastern Indonesia in exchange of the Japanese medical and technical assistance. Under the one year agreement, Indonesia will receive medical and technical assistance worth US $ 135,000 while 310 Japanese vessels will be permitted to fish in the Banda sea by paying US $ 3,000 per vessel upto 70 tonnes and US $ 3,900 vessel beyond 70 tonnes.

The Japanese trading firm, Toyomenka is to set up a corporation in Jakarta for shrimp fishing.

The corporation - Tomen Public Fishing Company Industry - will be formed with a capital of US $ 27 million. This will be fully invested in ten years, with an initial capital of $ 10 million in the first year. It will operate shrimp trawlers south west of Borneo. Production is expected to amount to $ 1.7 to $ 1.9 million annually.

Toyomenka agreed provisionally with Indonesian authorities in August, 1968 to invest 100 per cent in establishing the Company, however, on condition that on the completion of the 10th year, it will sell to Indonesia 49 per cent of the corporation shares and at the end of the 16th year 52 per cent.

The programme includes establishment of five shrimp fishing bases and construction of cold storages, processing plants, and manufacturing plants, radio station for fishing vessels, fuel and water supply facilities and operation of a training centre for fishery technicians. Twelve fishing vessels (ten fishing and two carriers) will be built for the corporation. To maintain these facilities the company will have to produce annually at least $ 2.8 million worth of shrimp.

Australia. Australia has developed fisheries on an industrial basis. It is the largest producer of cray fish accounting for over 14,000 tonnes in 1966-67 valued at $ 18.4 million. Prawns hold out promise for the future of Australian fishing industry. The prawn catch in 1966-67 was over 6,000 tonnes valued at $ 6.2 million. Operations in the Gulf of Carpentaria area are expected to produce over 10,000 tonnes of shrimps in a year. This potential had roused considerable interest among foreign fishing nations, attracting not only Japan but also a number of other countries. Uptill October, 1968 four Australian Japanese ventures had been approved in that area on condition that foreign vessels and crew are replaced by Australian boats and crew within five years. In view of the interest of the Government of Australia for the development of northern Australia, it favours establishment of shore processing bases.

M/s Nihen Kinkai Hogei Company Limited, a subsidiary of Taiyo Fishing Company has a joint venture programme with South Sea Fishing Company, Brisbane, Australia, operating from 1966 with one mother boat and ten shrimp trawlers.

Kyokuyo - Hogei Company has registered in collaboration with an Australian fishing company for operating in the Gulf of Carpentaria with 55 per cent share in the capital. Ten trawlers of 100 to 550 GRT are working from April, 1969.

Overseas Investment in Fisheries by USA and Japan

USA. The leading US fishing companies, processors and the established importers of shrimp and lobster tails are focussing their attention and intensifying their efforts to build up their own fleet with modern equipment and extend their fishing operations and processing facilities more and more in collaboration with fishing companies in most of the Latin American countries, Africa, Middle-East and Far East. This strategy would not only augment the catches but also meet the growing domestic demand for these products. The developing countries in turn have created favourable climate and offer attractive terms and conditions for foreign investment in fishing industry. The major US fishing companies operating overseas are listed below:

Company	Area of Operation
Booth Fisheries	Nicaragua Mexico Canada

Company	Area of Operation
Continental Seafoods	El Salvador Nigeria Pakistan Liberia
Ralston Purina	Philippines Panama Peru Gaum
Bortens	French Guiana Brazil
W.R. Grace	Brazil

Japan. As per the economic policy adopted by the Japanese Government in the post-war era overseas investment on fisheries was initiated for the first time in 1953, since then it has been increasing as shown in Annexure IV-B. The basic policy of the Fisheries Agency for the overseas investment in fisheries is to satisfy as far as possible the requests of entrepreneurs asking for the acquisition of licence by the Japanese Government to operate the enterprises under capital cooperation if there exist no obstacles considering the relationship with domestic industry. The total amount invested by the Japanese in the joint venture arrangements amounted to 2,737 million Yen as of the Ist October, 1957 in 28 countries with

38 established enterprises on the spot. Breakdown by region and by type of fisheries is shown in AnnexuresIV-C&E In regard to the number of enterprises by regions Asia and Oceania head the list while Latin American region is overwhelming in the amount of investment forming 44 per cent of the total which corresponds to twice as much that of Asian and Oceania region. As to African region both the number and the amount are at the low level due to reasons that most countries in the region are still at the developing stage and these countries are economically behind in attempting to improve their own fisheries by receiving foreign capital.

The overseas entry of Japanese fishing industry has taken several forms*, depending on the nature of the fisheries and the conditions prevailing in the different countries, such as:-

Joint Management;
Charter establishment system;
Marketing contract of fish catches;
Operating contract of fishing bases and facilities.

---

* See Annexures IV-D&F.

The contract with the developing countries takes the shape of one or two of the above factors for the purpose of promotion of the fishing industry. More than half of the capital and crew members are normally provided by these countries. The contract with the developed countries had taken the form of landing and marketing of catches with those countries, as in the case of Japan and USA in Samoa concluded in 1956. At present 30 to 40 Japanese tuna vessels are operating in this area.

Tuna fishing initiated in 1959 has been showing a declining tendency since 1963. Such a downward trend has been brought out by intensification of fishing operations by South Korea and Taiwan and by the change over of part of the Japanese large tuna vessels in the Atlantic to operate in Indian and Pacific oceans.

A striking development in early sixties relates to prawn landings. The landings increased from 247 tonnes in 1961 to 7,700 tonnes in 1964 and 35,024 tonnes in 1966. With the strong world demand and high price for prawns and with the economical production of medium trawlers of 50 to 100 tonnes, the fishing seems to have been stabilised. Further, the resources are distributed far and wide in coastal waters of temperate and tropical zones. The fisheries are operated actively in Venezuela and Guiana in South America and in South East Asia and Australia and the catches in the former areas are exported mainly to United States and the latter to Japan.

There are a few cases of direct operations with bases by Japanese fishing companies working exclusively in the fishing grounds adjacent to foreign countries with the permission of Government.

The Overseas Technical Cooperative Agency (OTCA) is in close touch with the governments of developing countries and various international organisations dealing with technical cooperation through the Ministry of Foreign Affairs. This Agency arranges for training and providing machinery and material to these countries. It is also engaged in the planning, survey, designing and public relations.

Recommendations. It will be seen that in most of the developing countries in Central and South America and Asia, the progress of fisheries development has been accentuated by large-scale investment in export-oriented industries like shrimp and tuna. Such a programme assisted by joint ventures with equity participation, technical know-how and managerial skill from overseas investors had contributed to accelerate the pace of development in these countries. It is, therefore, considered necessary for India to take advantage of the large number of fishing companies already operating their vessels in the Indian Ocean and adjoining areas and make arrangements for promoting joint ventures between these companies and suitable parties in India for tuna and shrimps and other items for export. In the process, the needs of the domestic market will also be met in a large measure as it was in Mexico, Nicaragua, Panama, Brazil, Surinam, Malaysia, Indonesia and Australia.

Fishing Operations Under Limited Charters. In such a programme of joint venture it would be desirable to bring in three or six units of vessels on chartered basis by the Indian registered companies. The detailed financial implications of chartering six shrimp trawlers 75' long from U.S.A. are worked out in Annexure IV-A.

A 75' shrimp trawler would give a return of $ 46,800 by landing 600 tonnes of fish valued at $ 60,000 during one year operation. It has also been estimated that by processing and exporting of fish landed by this trawler foreign exchange earnings worth $ 200,000 can be realised.

Chartering of the vessels during the early phases of the joint venture can give the following additional benefits:

> The joint venture company can get boats in operation within two to six months of its formation;
>
> It would enable to observe the type of equipment being used successfully in countries like USA, Mexico, South America and West Africa;
>
> It would also enable to observe the operation of fishing vessels of varied designs in Indian waters and this would facilitate early designing and construction of similar vessels in India with suitable modifications and improvements;
>
> If found suitable the details of designs and construction can be taken up six months after the arrival of the vessel on charter and the construction details finalised in a year. Allowing a year each for preparing field structural details and drawings as well as model tests; the construction and supply of the first series of shrimp trawler and other fishing boats of special types could be undertaken in the country by the end of the third year.

For instance a scheme is already under active consideration of the Government for exploring the scope of collaboration with the commercial fishing companies in Kuwait. The scheme has several encouraging features. Shrimp fishing in regions close to Kuwait is restricted to 8 months in a year and the vessels of these companies could be profitably operated on the north-west and south-west coasts of India with favourable terms of operation specially during the lean season in Kuwait. The companies in Kuwait are already operating in collaboration with parties in Indonesia and Australia. Therefore, in negotiating joint ventures with the fishing companies in Kuwait, the time limit to bring fishing vessels into operation at the earliest opportunity is important. It will be possible to bring some of the shrimp trawlers belonging to these companies to work either under charter or as a contribution to the equity capital of a joint venture enterprise.

Although Deep Sea fishing has been accepted by the Government of India as one of the priority industries for foreign collaborations in 1969, the terms and conditions necessary for the purpose had not yet been drawn up for the benefit of interested parties in India and abroad. It is, therefore, necessary to lay down broad terms and conditions for joint venture enterprises between local and foreign parties for undertaking fishing operations, processing and export marketing.

Annexure I-A

Sizewise Distribution of Mechanised Fishing Fleet
(As on 31-3-1969)

States	Number of Boats								
	Less than 25'	25' to 29'	30'	32'	34'	36'	More than 36'	Unspecified length	Total
Gujarat	668	433	145	136	-	120	207	-	1,709
Maharashtra	120	108	64	167	-	522	1,412	-	2,393
Mysore	32	49	414	53	-	28	-	-	576
Kerala	64	236	764	225	-	108	16	25	1,438
Tamil Nadu	-	150	726	90	-	-	-	-	966
Andhra Pradesh	-	89	136	45	2	-	4	-	276
Orissa	9	3	3	24	-	9	30	19	97
West Bengal	-	-	7	-	-	-	2	-	9
Laccadives	7	12	60	6	-	-	2	-	87
Andamans	-	-	-	-	-	-	-	5	5
Goa	4	25	11	26	-	40	4	-	110
Pondicherry	-	10	10	12	-	-	-	-	32
Total (All India)	904	1,115	2,340	784	2	827	1,677	49	7,698

Annexure I-B

Boat Building Yards (Wooden Boats Construction)

States	Name of the Yard	Year of Establishment	Original Annual Capacity	Type
	Government Boat Building Yards			
Mysore	Govt. Boat Building Yard Karwar	1965	50	30 to 36 ft.
	Govt. Boat Building Yard Mangalore	1959	50	30 to 36 ft.
Kerala	Govt. Boat Building Yard Cannanore	1965	50	30 to 40 ft.
	Govt. Boat Building Yard or Kazhikodi	1967	40	25 to 36 ft.
	Govt. Boat Building Yard Saktikelangars Quilon	1964	60	25 to 36 ft.
	Govt. Boat Building Yard Vizhinjom	1960	40	25 to 32 ft.
	Govt. Boat Building Yard Beypore	1964	40	25 to 32 ft.

Contd..

States	Name of the Yard	Year of Establishment	Original Annual Capacity	Type
Laccadives	Govt. Boat Building Yard Kavaratti Island	1967	40	30 to 36 ft.
Tamil Nadu	Govt. Boat Building Yard Royapuram	1965	50	30 to 42 ft.
	Govt. Boat Building Yard Marina	1966	60	30 to 36 ft.
	Govt. Boat Building Yard Nagapattinam	1964	30	30 to 36 ft.
	I.N.P. Boat Building Yard Mandapam, Ramnadu Distt.	1965	40	32to 43 ft.
Andhra Pradesh	Govt. Boat Building Yard Kakinada-	1957	60	32 to 37 ft.
West Bengal	M/s Garden Reach Workshops Fairlie Place Calcutta	-	-	-

Contd..

States	Name of the Yard	Year of Establishment	Original Annual Capacity	Type
	Co-Operative Boat Building Yards			
Mysore	South Kanara Distt. Co-operative Fish Marketing Federation Ltd. Mangalore	1950	20	30 to 36 ft.
	Fishermen Enterprises Malpe S.K.	1964	20	30 to 36 ft.
	The Coondapur Fisheries & Boat Building Co-operative Society Ltd. Coondapur S.K.		20	30 to 36 ft.
Kerala	M/s Beypore Marine Engg. & S.I. Co-operative Society No. 75 Beypore Calicut	-	20	30 to 36 ft.
Tamil Nadu	Tirunelveli Dist. Fishermen Co-operative Federation Ltd. Boat Building Yard Tuticorin	1961	40	30 to 32 ft.
Orissa	Orissa Boat Builders Ltd Mandapara, P.O. Jagatpur	1965	-	-
	Fisheries Development Corporation Boat Building Yard, Jagathpur	1963	-	-

States	Name of the Yard	Year of Establishment	Original Annual Capacity	Type
	Co-operative Boat Building Yards (Contd.)			
Punjab	Boat & Furniture Co-operative Industrial Society Ltd Ropar,	-	-	-
Gujarat	Gujarat Fisheries Central Co-operative Association (G.F.C.C.A.) Boat Building Yard Veraval	-	-	-
	Dukshin Gujarat Vahan Vatu & Matsa Oudhyog Sangh Ltd Bulsar	-	30	30 to 40 ft.
	The Veraval Boat Building Yard Veraval	-	-	-
	The Umbergaon Fishermen Sarvodya Sahkari Society Ltd Umbergaon Distt. Bulsar	-	20	30 to 48 ft.
	The Umbergaon Boat Building Yard Umbergaon	-	20	30 to 40 ft.
Maharashtra	Satpadi Machimar Multipurpose Co-operative Society Ltd Satpadi	-	20	35 to 50 ft.
	Alibag Machimar Vividh Karyakari Sahkari Society, Alibag	-	20	30 to 40 ft.

Contd..

States	Name of the Yard	Year of Establishment	Original Annual Capacity	Type
	Private Boat Building Yards			
Mysore	Shri J. Purushothama Boat Builder, Hoige Bazar Mangalore-1	-	-	-
	Shri Sanker Naik Boat Builder, Hoige Bazar Mangalore	-	-	-
	Mangalore Boat Building Co. Hoige Bazar Mangalore	-	-	-
	Shri Ananda Mestri Boat Builder, Hoige Bazar Mangalore	-	-	-
Kerala	M/s Cama N. Kupta Engg. Works Old Power House Lane Cochin-5	1963	30	30 to 36 ft.
	M/s Brunton & Company Engg. Ltd. Ballard Road, Cochin	1965	65	30 to 36 ft.
	M/s K.R. Cletus Boat Builders, Palluruthi Cochin-6	1965	20	30 to 36 ft.

Contd..

States	Name of the Yard	Year of Establishment	Original Annual Capacity	Type
	Private Boat Building Yards (Contd.)			
Kerala(contd.)	M/s K.J. Xavier Boat Builders Palluruthi Cochin	1960	15	30 to 36 ft.
	M/s Vevukott Industries Cuhaar Thurhtu Cochin	1965	25	30 to 50 ft.
	M/s K.B. Thomas & Thomas Boat Builders Cochin	1961	25	25 to 36 ft.
	M/s P.D. Mathachon & Sons Boat Builders Cochin	1954	30	25 to 36 ft.
	M/s Bharat Industrials Thoppumpedi Cochin	1961	30	30 to 45 ft.
	M/s K.J. Varuthu Kutty & Sons Palluruthi C Cochin	1961	30	30 to 36 ft.

Contd..

States	Name of the Yard	Year of Establishment	Original Annual Capacity	Type
	Private Boat Building Yards (Contd.)			
Kerala (contd.)	M/s Shah Popatlal Muljee Boat Builders Cochin	1963	50	30 to 45 ft.
	M/s T.K. Engg. Industries Cochin	1967	15	25 to 32 ft.
	M/s United Boat Building Industries Cochin	1962	10	30 to 36 ft.
	M/s P. George & Company Thoppumpedi Cochin	1963	-	25 to 32 ft.
	M/s South India Boat Builders Palluruthi Cochin	1966	5	30 to 32 ft.
	M/s St. Antony's T.C. Engg.Works Palluruthi Cochin	1966	4	30 to 32 ft.
	M/s Shenoi Enterprises Cochin	1964	20	25 to 32 ft.
	M/s Veruna Boat Builders Cochin	1964	15	25 to 36 ft.

Contd..

States	Name of the Yards	Year of Establishment	Original Annual Capacity	Types
	Private Boat Building Yards (Contd.)			
Kerala (contd.)	M/s E.P. Thammutty, Boat Builders Beypore	-	-	-
	M/s T.A. Augustin Boat Builders Gothuruthy	1963	10	25 to 32 ft.
	M/s Ruby Engg. Boat Building Corp. Cochin	1965	5	30 to 32 ft.
Tamil Nadu	M/s Kumar Industrial Enterprises 84 Sydenham Road Madras	1959	25	30 to 36 ft.
	M/s Rajappa Nadar Boat Builders,22/1, Santhi Road	-	6	30 to 32 ft.
Orissa	M/s Modern Traders Boat Building Yard, Jobra Cuttack	-	-	-
	M/s Maharadi Engg. Works Boat Builders, Ranihat Cuttack	-	-	-

Contd..

States	Name of the Yard	Year of Establishment	Original Annual Capacity	Types
	Private Boat Building Yards (contd.)			
Punjab	M/s Shehar Furniture Factory Ropar Punjab	-	-	-
	Shri Bhagwan Singh & Sons 65 Industrial Area Chandigarh	-	-	-
Gujarat	M/s Dulbhaiji Fakir Bhai Wadia Veraval	-	20	30 to 40 ft.
	Shri Bhubatti Boat Builders Kansara Bazar Bhuj	-	25	30 to 36 ft.
	M/s N.M. Wadia, Boat Builders Billimera	-	40	30 to 45 ft.
	The Bulsar Boat Building Yard Bulsar	-	30	30 to 40 ft.
Maharashtra	Kasinath Boat Building Yard Satpati	-	10	30 to 30 ft.
	M/s Harish Chandra Sovar Mehar Boat Building Yard Dahnu	-	12	30 to 40 ft.

Contd..

States	Name of the Yard	Year of Establishment	Original Annual Capacity	Type
	Private Boat Building Yards (Contd.)			
Maharashtra (contd.)	M/s Datta Trayer Vidhal Vaze Boat Building Yard Dahnu	-	12	30 to 40 ft.
	M/s Clement Francis Robello Boat Builders Pappadi, Distt. Thana	-	15	30 to 40 ft.
	Afco Pvt. Ltd. Madh Island	1958	10	35 to 43 ft.
West Bengal	M/s Himai Chand Barich Boat Builder Chandra	-	-	-

Contd..

List of Shipbuilding Yards*

M/s Shalimar Works (P) Ltd
1 Foreshore Road
Howrah

M/s Hoogly Docking & Engg. Co. Ltd
6 Howrah Road
Howrah

M/s Garden Reach Workshop (P) Ltd
43/46 Garden Reach Road
Calcutta-24

M/s Alcock Ashdown & Co. Ltd
Defence Works
Mazagaon
Bombay-10

M/s Scindia Workshop (P) Ltd
Mazagaon
Bombay-10

M/s Shaparia Dock and Steel Co. (P) Ltd
Sewri Fort Road
Bombay-15

M/s Goa Shipbuilding Yard
Murmugao
Goa

M/s Port Engineering Works Ltd
Nazirganj
Howrah

M/s Peoples Engg. & Motor Works
Ltd
13 J.N. Mukherjee Road, Salkia
Howrah

M/s Mazagaon Dock Ltd
Mazagaon Dock Yard Road
Bombay-10

M/s AFCO Private Ltd
16 Sleater Road
Lakri Bunder
Bombay-7

M/s Brunton & Co. Engineers Ltd
Ballard Road
Cochin-1

M/s Andrew Yule & Co.
Calcutta

* Individual capacity of each yard is not available.
Total capacity is estimated at 50 vessels per annum.

Annexure I-C

Specifications of 17.5m Trawlers

Main Particulars

Length overall - 17.50 m.
Length W.L. - 16.00 m.
Length B.P. - 15.25 m.
Breadth moulded - 5.50 m.
Depth moulded - 3.00 m.
Draft at stern - 2.25 m.
Fresh water capacity - 3.600 litres
Loaded Displacement - 75 tonnes (approx.)
B.H.P. - 200 H.P. at 1000 R.P.M. (MAN/Kirloskar) at N.T.P. 218 H.P. at 1800 R.P.M. (Kirloskar/Cummins) at N.T.P.
Speed - 8½ Knots in Trial condition in deep water and Beaufort Zero.
Bollard Pull - 1.25 Tonnes

1) General

The vessel will be built in accordance with the approved Drawings and this Specification.

The hull will have a multi chine conic form. The construction will be of all welded type, shipbuilding steel plates and sections will be used.

The deck will have ample sheer forward. A large flat deck space to be arranged as shown abaft the deckhouse for trawl fishing with a single trawl or double rig trawls. The working area of the deck to be sheathed with 50 mm thick wood. The deck to have a camber at midship of 4".

All timber will be seasoned and of good quality teak free from knots, shakes or warps. Tight knots of upto 3/4 dia. will be permitted.

The underdeck space to be divided by four bulkheads into 5 compartments i.e. fore peak, crew accommodation, engine room, fish hold and after peak.

Bilge kneels will be arranged after adequate tank tests.

A steel deckhouse to be arranged to house a galley, mess, W.C. and a two berth cabin. A wheelhouse of aluminium alloy rivetted construction to be arranged above the after part of the deckhouse to facilitate all round view as shown in the G.A. drawing.

The fore peak to be arranged as a store with shelves.

Crew's accommodation to be fitted with six berths and necessary lockers. The space below the crew accommodation a floor to be arranged in a fresh water tank and to be separat separated from engine room double bottom tanks by a cofferdam.

Four fuel oil tanks to be arranged in the engine room, two of which to be double bottom tanks. Necessary daily tanks to be arranged in the space below the wheelhouse. Total fuel oil capacity will be 10 tonnes. A separate space for batteries to be arranged with direct entrance from the deck.

The fish hold to be fitted with smooth, easily cleaned watertight bulkheads and panels. Drainage through suitably located scuppers to a sludge water tank in the double bottom to be arranged. Special arrangements to be made to carry ice in the after part of the hold.

The stern compartment to be arranged to house the steering gear.

2) Glass

The vessel to be built to meet the requirement of the Mercantile Marine Department of India in all respects, including Class VIII for the purposes of safety equipment and will be constructed under the supervision of owner's representatives and MMD Surveyors.

3) Tests and Certificates

After completion a sea trial to be carried out in the presence of owner's representatives and MMD Surveyors. During the trial ship's speed, machinery, navigational equipment and fishing utilities etc., will be tested to owners' satisfaction, followed by fishing trials.

All relevant certificates and operation manuals to be supplied.

4) Description

4-1 Keel, stem, stern and rudder

The vessel to be built with a 150 x 12 mm. flat bar keel and stem and a transom stern. The skeg will be of 12 mm thickplate at the after end of which will be welded a 150 x 25 mm. F.B. for stern post. A single plate balanced rudder connected to the rudder head with a horizontal coupling will be fitted. Rudder and rudder head to be removable, independent of each other.

4-2 Frames, floors and shell plating

75 x 50 x 6 mm O.A. toe welded frames with a frame spacing of 500 mm to be provided throughout. Plate floors to be fitted at every frame. Floors in the engine room will have a thickness of 8 mm and will be efficiently bracketed to the engine seatings. The thickness of floors elsewhere will be 6 mm. A face flat bar will be welded to every floor. The scantlings of the face flat bar to engine room floors will be 50 x 8 mm and 50 x 6 mm to floors in other compartments.

4-3 Bulkheads

Bulkheads will be of 8 mm plate thickness and to be stiffended by 75 x 50 x 6 mm O.A. snipped off at both ends.

4-4 Deck, Deck beams and girders

The deck plating to be 6 mm thick and supported by 75 x 50 x 6 mm O.A. beams and 150 x 75 x 8 mm O.A. girders, one on each side of the centre line, in line with bulkhead stiffener and bracketed to it.

Beam knees to be welded to the frames and deck beams. The deck plating to be strengthened under trawl winch trawl gallows and bollards etc. as necessary.

4-5 Bulkwark

Bulkwark plating 6 mm thick to be welded directly to the shell plating. 150x75x9 mm O.A. stays to be arranged at every third frame. The top of the bulkwark will be stiffened by a 100x8 mm flat bar rail. Freeing ports, etc. will be provided as per G.A. Plan.

4-6 Hatches

A steel hatch 600 x 600 mm with 610 mm coaming to be arranged between frames No. 24-30 on the starboard side. An insulated steel hatch 1500 x 1200 mm with 610 mm coaming, to be arranged between frames No. 7-10. A water-tight steel hatch, 500x600 mm flush with deck to be arranged above the steering gear compartment.

4-7 Deckhouse and Wheelhouse

The deckhouse to be constructed of 5 mm thick plating stiffened by 50 x 50 x 50 mm O.A. frames and beams. The aft corners will be suitably strengthened to take out rigger booms. Engine room entrance and W.C. to have steel bulkheads. The deckhouse top will be extended 375 mm outside the deckhouse front and side bulkheads, as shown in the plan.

The wheelhouse will be of rivetted aluminium alloy construction using 5 mm thick plates and 45x45x5mm angle stiffening. The wheelhouse room will be extended 375 mm outside wheel house side and forward bulkheads forming a sum visor.

4-8 Masts, boom and exhaust pipe

A steel mast, rigged as shown on general arrangement, to be placed immediately abaft the deckhouse and efficiently supported under deck. A strong steel tabular boom will be attached to the mast. This boom will be used for lifting stern trawl of 1.5 tonnes and for discharging fish cargo from the hold.

An outrigger boom, length of 6.30 mm will be fitted on each side of the deckhouse. These steel tube booms, intended for carrying side trawls of 1 tonne when fishing with two trawls to be stowed on the deckhouse room when not in use.

The exhaust pipe, extended 1.8 m above deckhouse room to be suitably insulated and secured.

4-9 Windows and doors

6 deckhouse windows 600x600 mm with 6 mm safety glass in rubber frames will be provided. Windows will be of opening type 8 Nos wheelhouse windows, 600 x 600 mm to be arranged as shown on plans.

Of these, 6 windows to be opening type. Opening windows to have a suitable non-corrosive drainage system. Entrance doors to be made of 50 mm timber and to be fitted with glass windows except the door to the engine room which will be gas tight and made of steel. Interior doors to be made of timber. Manholes to be fitted to all tanks for access.

4-10 Laddders

Steel ladders with hand rails to be arranged for access to engine room and crew's accommodation. Suitable ladder rungs will be welded to deckhouse front bulkhead. Fish hold will have a removable aluminium ladder with fittings on the batch coaming. Vertical ladder steps to be welded to the bulkhead in steering gear compartment and fore peak. The mast to be provided with welded rungs to reach the top rig fittings. The stair from deck to the wheelhouse to be made of timber.

4-11 Deck cover

Aluminium chequered plate flooring will be provided throughout the engine room. Two berth cabin-galley/mass, A.C. and an accommodation under deck will have floors covered with a suitable deck composition.

The wheelhouse floor will have wood sheathing 1/2" thick.

4-12 Insulation and pannelling (except fish hold)

The bulkhead and the deck between the engine room and accommodation to be insulated with sprayed asbestos. Other bulkheads, side walls and ceilings below unsheltered decks to have 50 mm fibreglass insulation, covered with plastic laminates.

4-13 Accommodation

Furniture of good design to be provided as shown on General Arrangement plan. All spaces to be arranged easy for cleaning. The W.C. to be fitted with an Indian style toilet. F.W. shower and a small wash-basin. The galley to have a Butane Gas cooking range, sink and shelves.

4-14 Fish hold

Fish room to be lined on sides and deck head with 3/4" T&G hard wood and insulated throughout with 100 mm fibreglass. Hold ceiling to be 2" thick C.P. teak or equivalent and to be in portable sections in way of shaft line. Insulation not required in way of shaft line.

The fish hold to be divided into six bins with stanchions of aluminium and division boards of timber. If possible, division boards to be of standardised size. Four scuppers connected to the sludge water tank below to be installed.

4-15 Ventilation

Accommodation under deck to be mechanically ventilated by means of two ducts extended through the deckhouse, fitted with electrical blowers. Small fans to be provided at each berth. Engine room to be ventilated by means of two 9" ducts with electrical blowers. Necessary air outlets from crew's accommodation and engine room to be provided. The deckhouse to have natural ventilation through doors and opening windows. Electrical fans for air circulation to be fitted -- two in the cabin, two in the galley, and one in the wheel-house. All tanks to be fitted with goose-neck air-vents. WC to have mushroom vent.

4-16 Steering gear

A hand operated steering gear to be installed.

4-17 Outfit

Two stockless anchors, with wire rope cables to be provided. One of the trawl winch drums to be used for anchoring and necessary blocks to be provided for this purpose. Fire extinguishers and fire buckets to be provided as per rules. Two life buoys, one fitted with 15 fathoms line and selfigniting light to be stowed on deckhouse sides. 10 persons inflatable life rafts of approved type to be stowed on the deckhouse top in front of the wheelhouse. 8 Life belts to be stowed in an easily accessible position in the deckhouse.

4-18 Trawl gear and winch

Two trawl gallows to be fitted on the deck aft as shown on the plan. The gallows to be of strong construction, well supported and efficiently fastended to the bulwark and to be removable.

Necessary bollards, fairleads, blocks and sheaves of best quality to be suitably positioned for stern trawling as well as for double rig shrimp trawling.

Two trawl boards to owners requirements to be delivered. A three drum trawl winch will be installed similar to which fitted on "Jheenga" and as shown on plan. The winch to be mounted on a strong base of channel bars, welded to the deck.

The trawl winch to be mechanically driven from the front power take-off on the main engine by a duplex chain with sprockets through a friction disc clutch.

Suitable guards will be fitted to the winch where necessary. A hand operated hydrographic winch to work upto 100 fathoms will be fitted. Necessary fittings will be arranged.

4-19 Painting

Steel work will be absolutely cleaned from mill-scale by shot blasting.

Marine paints of international make or equal will be used.

Number of coats will comprise of a primer coat followed by two finished coats. Colour scheme to be submitted indue course.

4-20 Main Engine & Auxiliaries

The vessel will be powered by one 6 cylinder, 4 stroke, Kirloskar/M.A.N. marine diesel engine uni-directional normally aspirated, single acting, trunk piston, solid injection, cold starting, standard vertical design, anti-clockwise rotation-TYPE W6V 17.5/22A. Continuous (24 hours) rating at NTP conditions - 210 BHP at 1000 RPM. Continous tropical output at 45°C - 200 BHP at 1000 RPM.

Standard Equipment for each Engine.

Suitable for electric starting through batteries charged by main engine driven dynamo.

Safety valves in crankcase (
Gear wheel type lubricating oil pump(Attached
fuel lift pump (
Fresh water centrifugal pump (

Self priming centrifugal bilge pump (
Self priming sea water circulating (Attached
   Centrifugal pump (

Automatic F.W. temperature controller.
Individual fuel injection pumps
Twine fuel and edge type lub. oil filter
Pressure gauge for lub. oil
Thermometer on cooling water outlet.
Engine Technometer.
Hand pump for priming and oil change.

Precision Governor
Special oil pump
Fly wheel and coupling bolts.
Silencer, Dry type, including expansion joint
Standard set of spanners and tools.
Standard set of spares.
Shop test.

A separate lub. oil cooler and a heat exchanger will be fitted.

The engine will drive a five bladed fixed pitch propeller, through a reverse reduction gear box, with a reduction ratio of 2:1. The reduction gear box will be complete with oil cooler and deck switch for wheelhouse control. V.P. propeller will be offered at extra cost and extra foreign exchange.

A front power take-off with clutch capable of transmitting 20 HP at 1000 RPM will be fitted on the engine to drive the trawl winch.

Stern gear will comprise of bronze shafting of adequate diameter. The Mild Steel stern tube will have cutlass rubber or equivalent inner and outer bearings. These will be of water lubricated type. Water pressure will be maintained at all times in the stern tube by a centrifugal pump operated via propeller shaft. Plummer blocks will be provided as necessary.

A 10 KW, 200 Volts, single phase, 50 cycles, auxiliary generating set cum 20 tonne/hr. bilge/fire pump will be installed. It should be able to charge engine starting batteries through a transformer and rectifier unit, if required.

4-21 Pining

(a) Fuel Oil System

The two double bottom fuel tanks will be cross connected. The two wing tanks will be also similarly cross connected. An electrical transfer pump will be installed to enable fuel to be transferred to fill the daily service tank. A hand operated spare pump will be connected to the daily tank. A return line will be arranged from the main engine to the double bottom tanks. The fuel oil filling line will be located near the aft bulkhead of the deckhouse and connected to the fuel oil valve chest provided, to enable filling on any of the fuel tanks.

A special galley range fuel tank (gravity feed) will be fitted in the galley. The tank will be connected to the fuel oil main system and filled by a semi-rotary hand pump. Alternatively, Butane cylinders and cooker subject to D.G.S. approval.

Fuel oil pipes will be black iron pipes, necessary filters will be supplied. Vent pipes to be adequately arranged.

(b) Bilge system (sea water system)

The main engine bilge pump will be connected to a valve chest, enabling bilge section from all compartments. Arrangements to be made for deck washing from a hydrant on the aft bulkhead of the deckhouse.

Sea water pipe to be of galvanished iron.

(c) Fresh Water System

Fresh water will be stored in a double bottom tank, coated with suitable FW tank solution. An electrically driven pump will supply fresh water to galley washbasin, shower and a deck stand via the header tank.

A semi-rotary hand pump will also be installed as a spare pump.

FW filling line will be located near the aft bulkhead of the deckhouse. The vent pipe will be extended to deckhouse top. FW pipes will be G.I. Pipes.

(d) Sanitary System

Yachi pressure type toilet to be provided.

Electricity distribution and installation

The electricity system will be of 220 volts AC single phase.

Electricity will be provided from the auxiliary generating set. At the engine room front bulkhead a switchboard with required fuse boxes to be installed.

Cables exposed to wetness (e.g., in the engine room in the fish hold and on deck) will be of braided type and armoured. Other cables will be duty 1 insulated, lead sheathed and PVC covered.

4-23 Electric Navigation outfit

Navigation lights to be wired from a special distribution board in the wheel house.

A searchlight 250 watts operated from inside the wheelhouse will be installed.

Adequate power has been supplied for the operation of radio telephone and fish finder.

A bank of heavy duty batteries will be supplied. This bank of batteries can be either charged from the auxiliary set or from the main engine dynamo. These batteries will supply power for operation of the radio telephone set and the echo sounder.

For the emergency services, i.e., navigation lights, aldies lamp and emergency lighting on the craft an independent circuit will be provided. The power for this circuit will be derived from the engine starting system. Engine starting batteries will be installed in the engine room. For other electrical appliances, power will be supplied directly from the auxiliary set via the switch board.

Equipment

Each trawler will be supplied with the following equipments mentioned below and elsewhere in the body of the Specification will be supplied only once.

1) Overhead reflector compass with 8" card and with binancle.

2) Azimuth mirror

3) One binocular 8 x 50 magnification

4) One set of oil and electrical navigation and fishing lights to comply with the rules.

5) 1 No. electrical horn.

6) 1 No. mechanical fog horn.

7) 1 No. 8-day marine clock.

8) 1 No. Aneroid Barometer.

9) 1 No. Sextant

10) One set of parallel rules, rolles rules chart dividers and chart magnifiers.

11) One deep sea lead and line.

12) 1 No. marine log with a range of 1 to 15 knots.

13) 1 No. Aldies Signalling lamp.

14) 1 No. Wheelhouse overhead 250 W. searchlight.

15) 1 No. persons buyant apparatus (Inflatable).

16) 6 Nos. Ship's rocket parachute distress

17) 12 Nos. Red hand flares.

18) 1 No. Knot clear view to be provided.

19) One Chronometer.

20) Schermuly line throwing rocket.

21) Hydrographic winch.

Owner's Supply

1) Fish Finder

2) Asdic

3) Radio Telephone

4) Radar

5) R.D.F.

6) Oceanographic Equipment

7) Bathy-thermograph

Alternative Machinery Specification

The specifications above are drawn up for craft powered by Kirloskar/MAN Machinery. Although the R.P.M. of these engines is as specified by the Ministry of Food & Agriculture, Kirloskar-Cummins engines are also ideally suited for powering of the above craft due to their compact size and light weight.

Kirloskar-Cummins Machinery Specifications

One Cummins NHRS-6M type marine diesel engine delivering at the fly-wheel 218 BHP at 1800 RPM continuous rating and driving through marine gear a five-bladed fixed pitch propeller. The marine gear will be of MG 512 hydraulic type with a reduction ratio of 4:2:1 giving maximum propeller revolutions of 430 per minute.

The engine will be fresh watercooled with a closed system including a heat exchanger. The engine will drive a bilge pump having a capacity of 100 gallons per minute against a head of 30 feet.

A front power take-off with clutch capable of transmitting 20 H.P. at 1800 RPM will be fitted on the engine to drive the trawl winch.

Annexure I-D

Specifications of 60' Mexican Steel Shrimper

Hull

Length	60' approximately
Beam	17'8" approximately
Draft	7'4" approximately
Keel	3/4" x 8% flat bar

Transom:

5/16" steel plate properly ribbed and reinforced with 3/8" x 3" flat bars on approximately 18" centres.

Shaft Log:

Schedule 80 heavy duty tubing to be trued and lined after complete installation. Skeg to be 5/8" plate from stern post to forward underneath hull and fared out at keel line.

Bowstem:

5/16" conical.

Framing:

3/8" x 3" flat bars on approximately 18" centers.

Deck Beams:

1/4" x 2" x 3" L extra reinforced for mast and winch.

Deck:

3/16" steel plate.

Deck Stringers:

Two (2) 3" x 3" x 1/4 L's extending through hull on 4" centers from stem to forward water tank bulkhead aft of ice hold.

Hull: 1/4" steel plate, all seams butt welded.

Bulkheads: 3/16"

Bulwarks: 1/4" steel plate. Three (3) weld on cleats and anchor chute built in with fair lead. Guard rail 4", forme of 1/4" plate.

Flooring:

To be 3/4" plywood set in proper angles and removable for access to bilge.

Ice Hold:

Ice hold to be insulated with 6" thurane insulation. Hold to be finished out as one large compartment with three (3) divisions on each side, one (1) compartment on each end. Cement and galvanized plaster lathe as reinforcing material on walls. Cement laid on floors and fared out at wall.

Painting:

Exterior of hull to waterline sandblasted to white metal. Apply one (1) coat Epoxy Zinc - two (2) coats Epoxy White or Owners choice of colour on all above waterline area.

Commercial blasted below waterline three (3) coats Silver primercon - two (2) coats Copper.

Interior painted one (1) coat Zinc Chromate and one (1) coat color. Inside of fuel tank not to be coated. Name painted on hull.

Tanks:

Two (2) fuel oil tanks built in sides of hull with bolt-in manholes, baffled to hold approximately 1600 gallons each, stern tank to hold 1740 gallons. One (1) oil tank to hold approximately 60 gallons. One (1) water tank built to hold approximately 575 gallons.

Cement wash coating to be applied inside water tank.

Power:

Owners Option.

Deckhouse:

Built of plywood, interior paneled with plywood. Overhead insulated with rockwood insulation. All trim and furniture of mahogany or equal. Three(3) built in berths. Closets, sink, table and cabinets, formica or equal to be used on sink cabinets and mess table. Total of three (3) bunks. House to have three (3) doors and nine (9) windows throughout. Marine hardware on doors and cabinets. Interior finished with two (2) coats of paint.

Engine Room:

One (1) 3" rubber cutless bearing.

One (1) 3" stuffing box for 1/2" flax packing.

One (1) complete steering mechanism, with chain, shaft 1 1/4" bearing, 1" sprockets, quadrant, rudder, 1" x 6" rudder shoe, stuffing box 2 1/2" for rudder stock, 2 1/4" cold roll rudder stock.

One (1) Keel condensor steel channel to be constructed on hull brackets with capacity as recommended by engine company.

One (1) set engine room air vents - plywood.

All tanks to have pipe collars for fuel lines, vents and filler pipes.

All lines run of black pipe.

Propulsion Group:

Propeller:

Four (4) blade RYSCO special.

Propeller Shaft:

3" diameter x 16' - 17- 4 PH stainless steel.

Steady Bearing

Roller bearing.

Stub Shaft.

3" cold rolled steel, welded PL flanges.

Accessory Equipment:

Mattresses (cotton pads) equivalent to bunks.
Pillows equivalent to bunks.
Four (4) 8 volt heavy duty batteries - Reliable No. HD 27 or equal.
One (1) 5" Kelvin White compass.
One (1) Mile Ray searchlight.
One (1) 3 burner steve - butane
One (1) Lister Onan 32 velt battery charging generater
One (1) Sink.
One (1) Shower.
One (1) Commodo.
One (1) Lerio pump.
Two (2) 30R Nerthill or RYSCO No. 1 anchors.
One (1) Dry chemical fire extingursher.
One (1) Canvas cover fcr hold.
One (1) Stroudsburg 515½T hoist.
One (1) Patterson 300 transmitter.
One (1) Model 11 Wood Freeman Pilot.
One (1) Bendix DR-9.
One (1) Horn.
One (1) Hill standard freezer.

Ground Tackle:

One (1) anchor reller built into stem cone.
600' - 1" polyethelene.
20 - 3/8" chain.
One (1) pipe box bit.

Rigging:

Mast made of 8" and 6" pipe, boom 6" pipe, 28' out. Riggers 6" Schedule 40, all necessary blocks and line to complete boat ready for double rigged shrimping, less nets, doors, cable, ice, etc.

Specifications of 72' Steel Shrimper

Hull:

Keel 3/4" x 8" flat bar.
Transom 5/16" steel plate properly ribbed and reinforced with 3/8" x 3" flat bars on approximately 18" centers.

Shaft Log - Schedule 80" heavy duty tubing to be trued and lined after complete installation. Skeg to be 3/4" plate from stern post to forward underneath hull and fared out at keel line.

Bowstem 5/16" conical.

Framing 3/8" x 3" flat bars on approximately 18" centes.

Deck Beams 1/4" x 3" x 3" L extra reinforced for mast and winch.

Deck 3/16" steel plate.

Deck Stringers - Five (5) 3" x 3" x 1/4" L's extending through hull from stem to forward water tank bulkhead aft of ice hold.

Hull 1/4" steel plate, all seams butt welded.

Bulkheads 3/16".

Bulwarks 1/4" steel plate. Three (3) weld on cleats and anchor chute built in with fair lead, Guard rail made from 6" formed of 5/16" plate.

Flooring:

To be 3/3" plywood set in proper angles and removable for access to bilge.

Ice Hold:

Ice hold to be insulated with 6" Thurane insulator. Hold to be finished out as one (1) large compartment with two (2) bin divisions on each side, one (1) compartment on each end. Cement and galvanized plaster lathe as reinforcing material on walls. Cement laid on floors and fared out at walls.

Insulated requirements for refrigerated boats or brine holding tanks will vary from this specification.

Painting:

Exterior of hull to waterline sandblasted to white metal. Apply one (1) coat Epoxy Zinc - two (2) coats Epoxy White of Owners choice of color on all above waterline area.
Commercial blasted below water line - three (3) coats Silver Primercon - two (2) coats Copper.

Interior of hull brushed and primed except ice compartment where insulation applied. Interior painted one (1) coat Zinc Chromate and one (1) coat color. Inside of fuel tank not to be coated.

Name and hailing port painted on hull.

Tanks:

Two (2) fuel oil tanks built in sides of hull with bolt-in manholes, baffled to hold approximately 4500 gallons each, stern tank to hold approximately 3500 gallons. One (1) tank to hold approximately 60 gallons. One (1) water tank built to hold approximately 900 gallons. Cement wash coating to be applied inside water tank.

Power:

Main power to be owners option

Deckhouse:

Wood:

Water tight window panes plywood house double 1/4" front. Glued together and 3/8" on sides same construction otherwise as Henderson double plates, glued, monel nails, top and bottom plates bolted and tie rods lower. All trim and furniture of mahogany or equal. Four (4) built in berths.

Closets, sink, table and cabinets, formica, or equal to be used on sink cabinets and mess table. Marine hardware on doors and cabinets. Interior finished with two (2) coats of paint or varnish. All deck house windows to be drop windows.

Engine Room:

1-4" Rubber cutless bearing.*
1-4" Stuffing box for 1/2" flax packing.
1- Complete steering mechanism, with chain, shaft 1 1/4" bearing, 1" sprockets, quadrant, rudder, 1" x 6" rudder shoe, stuffing box 2 3/4" for rudder stock, 2 3/4" cold roll rudder stock.
1- Keel cooler steel channel to be constructed on hull brackets with capacity as recommended by engine company.
1- Set engine room air vents - plywood.
All tanks to have pipe coolars for fuel lines, vents and filler pipes.
All lines run of black pipel.

Propulsion Group

Propeller four (4) blade Federal Propeller to suit horsepower of engine.

Propeller shaft 4" x 18' 17 - 4 PH stainless steel.
Steady bearing - roller bearing.
Stub Shaft 4" cold rolled steel, welded PL flanges.

Accessory Equipment:

Mattresses equivalent to bunks.
One (1) Petters of One (1) Lister Onan 32 volt battery charging generator.

1 - Censorvolt.
4 - 8 volt heavy duty batteries - Reliable No. HD 27 or equal.
1 - 5" Kelvin White Compass or equal.
1 - Perko Searchlight 885 or equal.
1 - Four (4) burner butane stove.
1 - Sink.

---

* Cutless bearing in stern tube after packing gland.

1 - Lerio Pump
2 - 30R Northill anchors or RYSCO No. 2 anchors.
2 - Dry chemical fire extinguisher.
Canvas cover for hold.
1 - Stroudsburg 518 T Hoist.
1 - Patterson No. 300 transmitter.
1 - Model 11 Wood Freeman Pilot.
1 - Bendix DR - 9
1 - Horn.
1 - Fog bell.
Shower & Commode.

Ground Tackle:

Standard Hill freezer.

One (1) anchor roller built into stem cone
600' - 1" Polyethelene
20' - 3/8" chain
One (1) pipe bow bit.

Rigging:

Mast made of 12" and 10" pipe, boom 6" pipe, outriggers 6" Schedule 40 - 34' long, all blocks and line to complete boat ready for double rigged shrimping, less nets, doors, cable, fuel, ice, etc.

Specifications of 85' Steel Shrimper

General Dimensions & Capacities

Length	85' - 0"
Beam	22' - 0"
Draft	10' - 0"
Midship Depth	11' - 6"

Gross Tonnage
Net Tonnage

Fish Hold Volume 4800 cu. ft. app.
Fish Hold Volume
with insulation 4000 cu. ft. app.

Tankage:

Wing fuel oil tanks (2) 13,100 gallons app. After fuel oil tanks (2) 8,300 gallons app.

Total fuel 21,400

Water tank (1) 2,500 gallons app.

Structural & Material Specifications.

As structural members and plating as described herein.

Hull:

Keel: 1" plate, 20" deep at skeg tapering to 10" at forefoot.

Forefoot: 1" plate, 10" at Keel tapering to 6" at cone.

Bowstem:

3/8" conic plate with 3/4" x 6" stiffering flatbar extending from forefoot section to deck plate.

Skeg:

3/4" solid plate welded to shaft log and keel with 5/16" plate fairwater cover 1/2" x 4" flatbar ribs.

Shoe 1 1/2" x 10" flatbar with 3 1/2" x 3 1/2" x 3/8" angle strongback under.

Shaft Log:

8" Schedule 80 piperfitted with cutless bearing and packing gland. And one cutless bearing in aft and of tube.

Horn:

3/4" x 9" plate welded to shaft log, extending to transom plate.

Engine Stringers:

Engine stringers of 3/4" x 4" x 6" L supported by 5/16 plate with 3" x 3" x 5/16 L stiffeners.

Shaft Alley:

To be formed of 1/4" plate supported by 3/8 x 3 flatbar and 5/16 x 3 x 3 L hatch support. This longitudinal to run from engine from bulkhead to aft fish hold bulkhead and be in continuous line with engine stringers.

Framing:

Mould frames 3" x 3" x 5/16" angle on approximately 73" centres with 9" x 9" x 5/16" plate chine gussets; intermediate ribs 1/2" x 3" flatbar on approximately 15" centers with 9 x 9 x 5/16 gussets on every.

Deck Beams

3" x 3" x 5/16" angle on approximately 15" centers.

Deck Longitudinals:

Five deck stringers of 3" x 3" x 5/16" angle on ship's centerline, 30" and 81" port and starbroad of centerline extend from the after engine room bulkhead to the after fish hold bulkhead.

Bulkheads:

Four 1/4" plate bulkheads welded two sides; 3" x 3" x 5/16" vertical stiffeners on 30" centers reinforced by two transverse 3"x3"x5/16" angle strongback welded to the stiffeners. Forward engine room fitted with 26x48 water-tight door; after engine room bulkhead fitted with jumper shaft packing gland. Two (2) bulkheads form the after fuel tanks.

Floors:

All floors of 1/4" plate 12" deep.

Tanks:

All tanks of 1/4" plate welded in and out, and fitted with longitudinals and transverse baffles of 1/4" plate. Access manholes are provided. Wing tanks equipped with sight guages.

Rudder, Stock & Tube:

Rudder is of the balanced type, 8/8" plate with 3/8"x3" flatbar stiffeners.

Rudderstock:

4" diameter STS.

Rudder Shoe:

2" x 12" flatbar.

Rudder Tube:

Schedule 80 pipe with bearing and packing gland (to fit above stock)

Stanchoins:

Two (2) 3" schedule 80 pipe stanchions extend deck beams and shaft alley longitudinals to support hoist load.

Plating

Hull bottom and sides 5/16" plate welded in and out.

Deck:

1/4" plate welded outside. 1/2" plate located to reinforce deck for mast, hoist, door racks, bitts, bow and stern.

Transom:

5/16" rolled plate: one (1) 5/16" x 12" plate strongback; 1/2" x 3" flatbar cants extending from bottom to deck plates.

Bulwarks:

5/16" plate with 3" Schedule 40 cap rail. Transom bulwarks plates rolled to required radius. 5/16" plate on every stanchion frame.

Hatches:

Coaming of 1/4" plate capped with 1 1/2" x 1 1/2" x 3/16" angle with 3/4" rod around L lip. Forepeak and lazarette hatches fitted with 1/4" plate hinged covers. Fish hold fitted with a built-up insulated cover.

Rub Rails:

3/8" x 6" special formed plate extending complete length of deck at sheer and around transom.

Keel Coolers:

2 1/4" x 10" channel welded to bottom plates. Length determined by engine specifications.

Ladders:

Engine room ladder 3/8" x 3" flatbar. Steps of 3/16" floor plate. Forepeak and lazarette ladders of vertical rung type.

Superstructure Deckhouse:

Framing 1/4"x3" flatbar; plating - sides and back 3/16" plate and roof and front 10 gauge plate. Interior coiled with 1/4" prefinished plywood. Sides and overhead insulated with rockwool; overhead coiled with 1/4" prefinished plywood. All trim and furniture of cedar or mahogany. Two (2) standard doors and seven (7) standard drop frame-windows. Aft corners reinforced to take outriggers. Constructed of 1/4" x 3" flatbar framing and 3/16" gauge sides and back, top and front plating 10 gauge; houses exhaust stack(s) and companion way and ladder to engine room.

Standard Fixtures and Appliances include:

One (1) galley stove complete (butane)
One (1) stainless steel sink
Formica counter top and drain board
One (1) combination refrigerator & freezer - Hill
One (1) toilet
One (1) shower.

Pilot House:

Framing 1/4"x3" flatbar: plating - sides and back 3/16" plate, roof and front 10 gauge plate, interior ceiled with 1/4" prefinished plywood panel: sides and overhead insulated with rockwool: overhead ceiled with 1/4" prefinished plywood. Two (2) standard doors.

Main Engine

Auxiliary Engine

Engine Controls

Morse or equal.

Shafting:

Tail shaft 5" - 17-4 PH stainless steel. Jumper shaft 5" cold rolled steel with welded flanges fitted with two (2) roller bearing or equal.

Propeller:

(to suit engine and gear)

Steering:

Mechanical through differential gear box: 42" wheel (mahogany). 12 turns hard over to hard over use 1 1/2" CRS shaft - not 1 1/4."

Bilge Pumps:

1-1 1/4" Jabsco hooked to main engine PTO.
1-1 1/4" Jabsco with clutchhooked to light plant.

Pressure System:

Fresh water pressure system.

Hoists & Winches:

Gougla and try net hoist with clutch hook up.

Piping & Plumbing:

Buige Piping: 2" Schedule 80 black pipe.

Fresh Water Piping: 3/4" Schedule 80 black pipe.

Fuel Oil Piping: 3/4" Schedule 80 black pipe. Complete with water trap on fuel.

Electrical

Generator: One (1) 32 volt Lister Onam.

Batteries: One (1) set Surretts M-23 batteries.

Wiring:

Plastic wiring in and out., standard commercial shrimp boat fittings with necessary switches boxes and panel.

One (1) reading light over each berth.

Insulation:

Fish hold 9" thurane (polyurethane) insulation all around covered with cement. Overhead coated with Epoxy. Three (3) partition walls on each side of hold.

Vent ice box.

Painting:

Exterior: Of hull to waterline sandblasted to white metal. Apply one (1) coat Epoxy Zinc - Two (2) coats Epoxy White or owners choice of color on all above waterline area.

Commercial blasted below waterline - three(3) coats Silver Primercon - two (2) coats copper.

Above waterline color: Owners choice.

Trim:

Name:

Interior: Of hull cleaned and primed. One (1) coat Zinc chromate and one (1) coat color. Inside of fuel tank not to be coated. Name painted on hull. All paint applied according to manufacturers directions and recommendations.

Outfitting:

Running Rigging: Blacks, and tackle for standard RYSCO double rigging: also, two (2) 16" Mckissick galvanized trawl blocks; one (1) 6" McKissick galvanised trynet block; lines 3/4" nylon.

Standing Rigging: "A" frame mast set on aft corner of house, standard boom 8" Schedule 40 pipe; stays and turnbuckles shrouds of 1 1/8" galvanized rod; 1 1/4 1" chain; standard 40' outriggers, reinforced 8" Schedule 40 pipe with two (2) 1" galvanized cable headstays. Standard pipe corners to take outriggers.

Ground Tackle:

One (1) anchor roller built into bow stem cone. Two (2) TYSCO No. 2 or equal anchors
900' - 1 1/8" nylon.
20' - 5/8"chain. With swivel
One (1) Pipe bow bitt.

Fire Fighting Equipment

Two (2) extinguishers 10≠Co_2
One (1) extinguishers 5≠Co_2

Life Saving Equipment

Two (2) ring buoys
Six (6) life jackets
One (1) six man CG approved life raft.

Standard Accessories:

One (1) 5" Kelvin White or equal with sphere.
Searchlight - one (1) Perko ≠ 885
Horn.
Metal Marine Model 15 pilot
Patterson 300 transmitter new model.
Bendix DR-9

Corrosin Protection:

One (1) 5" Godfrey collar, with zincs as required.

Vessel complete ready for double rigged shrimping, less nets, doors cable, fuel, ice, etc.

Annexure I-E

Specifications of "Storem 8" (Poland) Shrimp and Other Trawler

1. General

1.1 Type and Designation

Fishing vessel for shrimps fishing in the tropical regions.

1.2 Propulsion

Single screw motor vessel driven by I.C. engine of Rolls-Roye type 06 NFIM developing 162 HP at 1800 rpm provided with a reduction transmission of ratio 4;1. The 3-blade propeller is of a constant pitch/non variable/and is made out of bronze.

1.3 Principal Dimensions

Length Lc = 17,60 m = 57' - 9"
Length between Perpendiculars Lpp = 15,00 m = 49" - 2 1/2"
Breadth moulded Bk = 5,20 m = 17' - 3/4"
Depth moulded H = 2,60 m = 8' - 6 3/8"
Craught to C.W.1. T = 2,05 m = 6' - 8 3/4".

1.4 Class

The vessel is built in compliance with the Regulations and under the survey of Polski Rejestr Statkow/Polish Register of Shipping/in a class with symbol.

was assigned. *P - 4 - R B

1.5 Displacement

The displacement of the vessel with fuel stores and ice equipped for fishing is about 77 tonnes.

1.6 Deadweight

The dead weight capacity of the vessel is about 15 t.

1.7 The capacity of insulated fish hold is 980 cubic feet. The fish is stored in ice in partitions of hold.

1.8 Speed and Cruising Range

The speed of the vessel loaded with a complete stores and ice, when leaving for fishing grounds, at the force of wind upto 3° B on calm and deep waters is 9 knots. The stores of fuel and in fresh water are sufficient for 240 working/hours of the engine at fuel load.

1.9 Stability

The stability of vessel complies with the "Rules for stability of sea-going vessels" issued in 1957 by Polski Rejestr Statków and is foreseen for the loading conditions as follows:

1. Vessel unloaded, but equipped.
2. Vessel when leaving for fishing grounds with complement of crew, fishing gear, 100% of stores of fuel and fresh water, food and ice in fishhold.
3. Vessel approaching fishing grounds, first haul effected, catch alongside.
4. Vessel on fishing grounds, first haul on deck between checker boards, second haul at suspended at gallow.
5. Vessel on fishing grounds, hold fully loaded, last haul on deck, 20% of stores.
6. Vessel leaving fishing grounds homewards.
7. Vessel arriving to port with store reserve for one day. For all the above loading conditions, the vessel in normal service will float with trim aft.

1.10 Crew

The crew consists of skipper, engineer and 6 fishermen.

2.1 Construction of hull

The hull lines are patterned on the Maier form. The frames are of the straight-segment type. The hull is of all welded construction of Siemens-Martin Steel St41 conforming with the regulations of the Polski Reiestr Statk 6w for the welded sea-going ships. Deck-house is of steel all welded construction. The wheel-house made out of aluminium alloy is welded.

2.2 Sternframe

The stern is of the cruiser form. It is made out of steel, welded of the open type with the heel to support the rudder.

2.3 Stem and Stiffening

The stem is of the raked type, welded of steel plates of 100 mm thickness, strengthened from inboard with a longitudinal stiffening member and brackets.

2.4 Watertight bulkheads

The WT bulkheads are fitted as follows:

1. After peak bulkhead on frames Nos. 3/4.
2. Stern bulkhead of the engine room on frames Nos. 7/8.
3. Forward bulkhead of the engine room on frame No. 16.
4. Forward bulkhead of hold on frames Nos. 25 and 25 1/2.
5. Forepeak bulkhead on frame No. 29.

The bulkheads are constructed out of steel plates 6 and 5 mm thick and stiffened with angle sections of 60 x 40 x 5.

2.5 Floors

All the floors are of 7 mm steel plates. The height of floors in hold is 400 mm; the upper flange on floors is of 65 mm wide.

2.6 Side Frames

The side frames are of angle section 60 x 40 x 6, transverse arranged, welded to the shell plating by intermittent filet welds and spaced for the whole length of vessel by 500 mm.

2.7 Shell plating and Bar Keel

The shell plating is all butt-welded of steel plates 7 mm thick. The garboard strakes, adjacement to the keel, are increased to thickness of 8 mm. Thickness of the bar keel is 30 mm, height 500 mm, out of which 100 mm is projecting inboard, above the base plane.

The shearstrake in way of the gallows is increased to 8 mm thickness. The seams of the shell plating are arranged at chines of the hull; on starboard they are provided with a half-round section of 60 x 30 welded to the shell plating as a protection against ropes and nets.

The bulwark is of 750 mm height, made out of steelplating 5 mm thick. The lower edge of the bulwark is stiffened with a round bar of 30 mm in dia, while the upper edge is ended with an angle section 100 x 50 x 8, which is panelled with wood perobande campos of 150 x 120 mm.

At every second frame, the bulwark is supported with bulwark stanchions. At each shipside, the bulwark is provided with 5 freeing ports.

2.8 Deck

The steel deck is made out of 5 mm thick steel plates; the deck stringer plate is of 7 mm thick. In way of the gallows, and of centre roller bollards, the deck-plating is strengthened to 10 mm thickness. Also, in way of the trawl winch, the plating is increased to 10 mm.

The long deck beams are out of angle section of 75 x 50 x 8 mm while the short beams are of 60 x 40 x 6 mm. The beam brackets are out of 8 mm thick plates. The steel deck, after thorough preservation and putting is planked with the planks of peroba de campos.

2.9 Aft deck house

Deckhouse is of welded construction, with the walls in their lower part of 55 mm thick. The upper part of deckhouse and its top are made out of 4 mm thick steelplates. The stiffeners are made out of the flat bars 30 x 60, and the beam out of 45 x 30 x 4 angle sections.

2.10 Wheelhouse

The wheelhouse is of welded construction out of hydronalium/aluminium ally/. The 4 mm thick plated are stiffened with angle sections of 60 x 40 x 6. The windows of the wheelhouse front side are adapted for opening.

3. Division of Hull

The hull is divided into 6 compartments by five WT. bulkheads.

a/ afterpeak,
b/ crew accommodation,
c/ engine room,
d/ hold,
e/ store room,
f/ chain locker

3.1 Afterpeak

The afterpeak extends from stern to bulkhead on frames Nos. 3/4. Access into the forepeak - from deck through a manhole provided with a slige lock. A fresh water tank of 2,9m^3 / 640 gal./ capacity is situated in the lower part of afterpeak. In the upper part, above the tweendeck a boss'n store is situated. On the main deck in way of afterpeak, the batteries of the radio, emergency lighting of starting, are located in a steel box. In the aft part of afterpeak, the rudder quadrant and guiding rollers for s steering leads are fitted.

3.2 Accommodation of Crew

Between the bulkheads on frames 3 and 8, a six person crew accommodation is situated, it is provided with six bunks, lockers, a table and a medical chest. The bulkhead dividing the crew accommodation from the engine room is provided with an acoustic insulation. The accommodation is provided with a natural light through two glass prismatic deck light and a side skylights mounted in the deckhouse walls. Entrance to accommodation is afforded from the passage in the after part of deckhouse and from the galley.

3.3 Engine Room

The engine room is arranged between the bulkheads fitted on frames Nos. 8 and 16.

3.4 Hold

The hold of 4.5 m/14.7 feet/length, is arranged between the bulkheads fitted on frames Nos. 16 and 25. The net capacity of the hold is about 980 cu. ft. The floors, walls and the ceiling are sheathed with impregnated pine boards. Between the side plating, bulkheads and the sheathing, an insulation of styrofoam of 120 mm thick is provided. Under the ceiling, on the sides and of the bulkheads are suspended the expansion coils of refrigerating piping. The hold is divided into a number of spaces, for storing fishes in ice, by means of detachable partitions. On deck, above the fore part of hold, a hatchway with coaming is fitted; the hatchway is insulated. A manhole of 600 x 600 mm is situated in the hatchway cover; the manhole is adapted for closing. Access to hold can be effected by means of a lightweight steel ladder.

3.5 Forestore

Between the bulkheads fitted on frames Nos. 25 and 29 a store room for nets and ropes is arranged. The store is provided with shelves mounted at both shipsides. Access to store room is afforded through a large sized manhole situated in deck. A fuel tank of about 2,9 m^2/ 658 gal./ is situated under the store room.

3.6 Deckhouse

In the aft part of the vessel, a deckhouse is mounted and it includes the following compartments:

1. Wheelroom,
2. Galley,
3. skipper's cabin,
4. W.C.
5. Downway to the living quarters under deck.

3.6.1 Wheelhouse

Ii is situated in the front part of deckhouse, with access from the both ships sides. The wheelhouse is equipped with:

a/ hand-operated steering engine with steering wheel and rudder-angle indicator,

b/ grating at steering stand,

c/ control panel with control instruments for the main engine operation.

d/ main engine controls,

e/ compass,

f/ navigation lights panel,

g/ radio equipment,

h/ echo sounder indicator,

i/ locker for the signalling code flags,

j/ chart table,

k/ folded bench.

The front windows are capable to be opened.

3.6.2 Galley

The galley is arranged behind the wheelhouse on starboard side. Entrance to the galley from the wheelhouse and from the outside, as well from the passage leading to the crew accommodation. The galley is fitted with a two plate, electric cooker, sink, table with food locker and a shelf for dishes.

3.6.3 Skipper's cabin

Beside the galley, rear of the wheelhouse on portside, the skipper's cabin is arranged with an entrance from the galley. The cabin is fitted with two bunks, one fixed and one openable, a wardrobe, a table and a tabouret. An air-conditional PPW-100 of Thermotank is fitted in the cabin at the wheelhouse wall.

3.6.4 W.C.

In the after corner of the deckhouse on portside, a W.C. is arranged. The W.C. is fitted with a closet of the so-called Indian type flushed with sea water from a container filled by means of a hand pump. Washing basin is also provided.

3.6.5 Downway to crew Accommodation

In the after end of the deckhouse, the downway to crew accommodation under deck is foreseen. From the passage, an entrance to the galley is provided through a sliding door.

3.6.6 Workmanship and Furniture of Living and Sanitary Accommodations

The floor in the crew accommodation is made of pines boards and is covered with vinileum. The walls and ceilings are panelled with a laminated, water-resisting marine playwood. The insulation of the walls and ceiling is effected with a hard-inflamable styrofoam.

The floor in the W.C. is covered with litosilo in mahogany colour. The furniture is made out of joinery plates and sheeted with "umilam".

4. Engine Room

4.1 Situation of Engine Room

Engine room is situated amidships between bulkheads on frames 8 and 16. Access to engine room is through the door arranged in the wall of wheelhouse at starboard side and direct from the wheelhouse.

The floor in engine room is made of steel checkered plates; the ventilation of forced type.

4.2 Main Engine

A high speed, I.C. engine Rolls-Royce type 06-NFIM of 162 HP at 1800 rpm provided for the vessel propulsion The engine is fitted with the reversible reduction transmission of ratio 4:1. This is a marine type; 6 cyl., 4 stroke engine with a close-cooling system with fresh water.

Suspended on the engine are: lubrication pump, cooling water circulation and outboard water pumps. A bilge pump "Jabsco" is driven by means of veebelt from the main engine. Also suspended is the 24 V, 1,32 kW generator for accumulator charging. The engine is electric started and from battery of the starting lighting accumulators.

4.3 Main Engine Control

Main engine control is effected from wheelhouse from the manoevuring panel. The control of transmission and of fuel supply is effected manually. On the instrument panel in the wheelhouse following instruments are fitted:

1. RPM indicator,
2. Lubricating oil pressure gauge,
3. Fuel pressure gauge,
4. Lubricating oil in transmission pressure gauge,

5. Thermometer of cooling water and two control lemps of the oil pressure in transmission and cooling water temperature.

4.4 Shaftline and Propeller

Shaftline consists of one part-shaft which in the stern part is placed in a sterntube.

Three-blade bronze, fixed propeller rotates clockwise with a speed of 450 rpm.

4.5 Electric Generator Set BUKH type G 105

A generator of 6 kw 220 V D.C. driven by IC. engine BUKH, is supplying the vessel during the fishing. The generator is supplying: refrigerating aggregate, galley electric cooker, ventilators and lighting. A generators type PC PC x 76/220 B T R M is provided for the emergency charging of accumulators.

4.6 Free Standing Generator

During passage to fishing ground and from fishing ground to harbour, the electric power is obtained from 220 V. DC. free standing generator which has an output of 6 kw. The generator is provided with an automatic voltage regulator and is driven from the main engine by veebelts.

4.7 Refrigerating Aggregate

The pre-cooling of hold to temperature 0° is effected by a compressor type freon aggregate "Kryos 16 XV" of "Sabroe". The output of aggregate is about 4700 keal/h. The aggregate is the recess of port-side in engine room between the bulkhead on frame 16 and the fuel tank.

The expansion coils are suspended in hold under deck, on sideboards and on both bulkheads.

4.8 Fuel Tanks and Fuel Pipings

Two fuel main tanks of capacity about 1130 gal. /5,14 m^2/ are situated on port and starboard of the engine room. The daily use fuel tank of capacity 80 gal./0,36m^3/ is situated on portside at the aft bulkhead of the engine room. In fore-peak is providedthe reserve fuel tank of capacity 658 gal./2,99 m^3/ - All the tanks are provided with the suitable fittings such as inlets, soundings, vents, quick-shut off valves, etc. The pipings are made out of steelpipes. A hand-operated pump of the output about 9 gal./411 l per min./ is provided for transferring the fuel from the main tanks and from the reserve tank into the daily use tank.

4.9 Bilge System

For bilge drying is provided one bilge-pump "Jabsco" which is located on a separate foundation and driven by means of a veebelt from the main engine. For emergency, a hand-operated pump of output 26,5 gal./120 l/per minute is provided. The pipings are provided out of galvanised steel pipes. In all the compartments, the suction piping are provided with the suction strainers.

4.10 Other Equipment of Engine Room

Installed also in engine room are:

- lubric. oil tank of capacity 40 gal./0,180 m^3/
- main switchboard
- fitters handy workshop with locker for tools
- hand-operated compressor
- compressed air bottle of capacity 11 gal./0,05m^3/
- two electric ventilators
- converter for electronavig and radio equipment.

4.11 Spare Parts

For the main engine and for other mechanisms, the spare parts are provided in quantity required by the regulations of Polski Rejestr Statków.

4.12 Machinery Outfit

The machinery outfit is provided in compliance with the "inventory list" in quantity required for normal operation of the vessel.

5. Deck Equipment Fishing Gear and Navigation Outfit

5.1 Steering Gear

The partly balanced streamlined rudder is supported in the sternframe heal and bearings fitted on the tweendeck and the main deck.

The rudder is connected with rudder stock by means of a flange coupling and bolts.

The rudder is actuated by means of a hand-operated steering engine and steering leads consisting of chains and rods provided with rigging screws and guiding rollers. The rudder quadrant is provided with stoppers foreseen for a rudder angle of 35 degrees to each shipside.

The steering engine is fitted with a rudder angle indicator.

5.2 Anchoring Arrangements

The vessel is equipped with one welded stockless anchor of 264 lbs. weight, fitted in a hawse pipe arranged on portside, and one spare Admirality anchor of 88 lbs. weight, fastened at the bulwark in the forepart of the vessel. The anchor chain is of the short-length of 54,5 fathoms.

The chain locker is arranged in the forepart of the forepeak behind the bulkhead fitted on frame No. 29. The anchor is heaved by using a single drum windless mounted on the deck above the chain locker driven from trawl winch by means of lines.

5.3 Mooring Arrangements

The mooring arrangement consists of ten double bollards, four of which are arranged vertically and one single cross bollard mounted forewards. At the bollards mounted on the bulwark side fearleads for mooring ropes are provided. The further mooring equipment, such as ropes, etc., complies with the requirements of regulations.

5.4 Life Saving Equipment

The vessel is fitted with one inflatable life-raft for 10 persons, placed on the deck-house, two lifebuoys, one with a lifebuoy light, and eight lifejackets, located on racks in living accommodations.

5.5 Fire-Fight Equipment

In compliance with the regulations, the vessel is provided with the fire-fighting equipment such as: fire extinguishers, /foam, CO2/, fire bucket with line, crowbar, firemen's axe, asbestos blanket and gloves.

5.6 Fishing Gear

The vessel is equipped with double rigging for shrimp trawling by method DRT. The gear consists of: three-drum trawl winch, a mast with side gallows / outriggers/, a T-mast, and the system of guiding rollers and blocks. The mast is situated on the main deck between the wheel-house and the trawl winch. It is made in the shape "A" out of steel tubes and is rigged with steel rods ø 18. The side gallows are fitted on joint to mast on the height of 2,20 m above deck and are made out of tubes and strengthened longitudinally with the steel rods. The outrigger of T-section shaped as "A", is fitted on joint to mast and with the upper part is fastened to bulwark and to mast travers by means of steel rods Ø 18. The trawling lines of the boundery winch drums lead through guiding rollers into the blocks situated at the ends of side gallows on PS and Stb. and to the main trawls. From the mid-drum the lines lead on the Stb. gallow at its hald length, and further into the davit situated at Stb. in the way of stern.

Besides the equipment for shrimp fishing, the vessel is equipped with the gear suitable for trawl fishing with her starboard. Two trawling gallows are situated on Stb., one of which is in the forepart and the other in the way of wheel-house, The gallows are made out of steel tubes and fitted on joints to basements and fastened in upper part to hatchway coaming - the fore one, and to deckhouse plating - the aft one. They are provided with blocks through which the lines are passing on the kingpins situated at the hatchway, and from there are passing for reeling on the trawl winch drums.

The three-drum trawl winch is situated in front of deckhouse and is driven by means of belt from the shaft end situated in the front part of engine. The shaft end is driving the intermediate shaft, which in turn drives the winch shaft through the Galla chain.

5.7 Navigation and Signal Equipment

The vessel is equipped with navigation and signal outfit according to the requirements of Polski Rejestr Statków and Urzad Morski/ Polish Register of Shipping and Board of Trade./

6. Other Systems of the Vessel

6.1 Sanitary Arrangement

A fresh water bank of 2.9 m^3/640 gal./ is arranged in the afterpeak. A service tank of about 5 gal. capacity is situated in stack on deck of deckhouse. The tank is filled by means of a hand-operated vane pump. The fresh water pipings are made out of steel pipes hot-galvanized. Fittings are of brass, nickel-plated. The washing basin in W.C. is out of faience, and the sink in galley is made out of stainless plate.

6.2 Ventilation

The ventilation of living spaces and engine room is forced by means of axial ventilators, supplying fresh air to the accommodations through a system of ducts. The vessel is provided with three ventilators, two charging ventilators fitted in the engine room below the wheelhouse and one exhaust ventilator fitted in the after part of the deckhouse.

The ventilators are of 250 mm diameter and driven by D.C. electrical motors of 220 volts voltage. The living spaces and the galley beside the forced ventilation are fitted with artificial exhaust ventilation. In the W.C. an exhaust ventilator of the mushroom type is provided.

Ventilation ducts in the accommodation are fitted with grids.

The natural ventilation for accommodations is afforded through doors, windows and skylights.

6.3 Painting

The preservation of the hull was carried out carefully taking into account tropical weather conditions. Undercoats are carried out by using anti-corrosive zinc chromate primers.

The following coats are of high quality marine paints. Colour of finishing coats were agreed upon with the Owners. Before fitting the deck planning, the steel deck was painted with a bituminous composition.

Annexure I-7

Specifications of TR-27 Stern Trawler (Poland)

1. General

1.1 Type and Destination

The vessel is designed as a stern trawler for both bottom and pelagic catching system and may be operated as single or pair trawler.

1.2 Purpose

The vessel is intended for service on the Baltic Sea and trawling cod fishes, herrings, mackerels, sprats and eventual other kinds of fishes.

The vessel will be foreseen for delivery of fresh catches in ice as well as landing abroad salted fishes in barrels.

1.3 Principal Characteristics

Length overall	27,50 m
Length on waterline	25,70 m
Length between perpendiculars	23,17 m
Beam	7,50 m
Depth, moulded	4,000m
Draught, design	2,85 m
Draught, aft	3,20 m

1.4 Propulsion

As propulsion unit a high speed engine developing 450 - 500 hp., at 750-1200 rev. per min. will be foreseen. The engine will drive a controllable pitch propeller at 300 rev. per min. manufactured by Messrs. Liaaen, fitted in a rotary Kort nozzle.

1.5 Capacity

It is assumed, that the displacement will amount about 250 tonnes, complying with and design draught of 2,85 m.

1.6 Stability

The stability of the trawler will be in accordance of requirements of the Polish Register of Shipping for ships with unrestricted zone of navigation.

1.7 Class

The vessel will be build according to requirements of rules of the Polish Register of Shipping and under the supervision of this Society. The hull will be build in compliance of the "Rules for Construction and Classification of Seagoing Steel Ships - 1964" of the Polish Register of Shipping.

The machinery and partly the deck arrangements will be build according to actual rules of the Polish Register of Shipping.

A class with the following character will be assigned:

for the hull: *P $\underline{4}$ RM
for the machinery: *RPM

Upon request of the Purchaser the trawler may be build in compliance of requirements of other classification societies indicated by the Purchaser.

1. 1.8 Speed and Pull

The speed taken on a measured mile should amount 10,5 knots, with the main engine normally running, at a state of the sea 2 of the Beaufort scale, and the vessel fully loaded.

At a trawling speed of 4,5 knots at mean weather conditions, the pull exerted on the trawl warps should amount 5 tonnes.

1.9 Range

The cruising Range will be 20 days, in result of which the stores with a certain reserve as follows:

- fuel oil 34 tonnes,
- freshwater 12,8 tonnes

1.10 Crew

The crew will consist of 5 persons. Accommodation for 9 persons will be foreseen.

2. The Hull

2.1 Construction

The hull will be of all-welded construction, made of Siemens-Martin steel accepted by the Polish Register of Shipping. The hull will be transversely arranged and provided with a continuous main deck and a forecastle dock extending to half the length of the vessel. On the forecastle deck a wheelhouse of aluminium alloy will be fitted.

The fuel oil tanks will be arranged in the after peak and underneath the fish-hold and engine room. The freshwater tank under the fish hold will be separated from the fuel oil tanks by cofferdams. Between the tanks the tunnel for the propeller shaft will be foreseen. In the shaft tunnel also pipelines will be fitted.

3. Deck Equipment

3.1 Steering Arrangement

The vessel will be equipped with a hand hydraulic, eventually a electro-hydraulic steering arrangement operated from the wheelhouse and a reserve steering stand on the navigation deck. The rotary Kort nozzle will act as rudder.

3.2 Anchor Gear

The vessel will be provided with two patent type stockless anchors, of 260 kg weight each, operated with the aid of a hydraulic windlass, and one stock admiralty anchor. The stockless anchors will be fitted in hawse pipes.

3.3 Navigational and Signalling Outfit

The vessel will be quipped with two magnetic compasses, one of which placed on the navigation deck and the second in the wheelroom mounted on the ceiling. An electrical operated engine telegraph and sound tubes will serve for communication between the wheelroom and the engine room and are provided for use in the event of failures in the arrangements for remote control of the engine.

A complete set of navigation lights and signalling aids, complying with the requirements of the Polish Register of Shipping rules will be foreseen.

3.4 Life - Saving Appliances

To inflatable liferafts, for ten persons each, four lifebuoys and ten lifejackets will be placed on board the trawler.

3.5 Fishing Gear

The vessel will serve for trawling by means of active fishing gear, namely:

- trawl nets for bottom and pelagic fishing,
- trawl nets for two-boat bottom and pelagic fishing

The trawls will be directly hauled on deck along the stern ramp with the aid of two single-drum hydraulic trawl winches. For heaving the trawl net bag a derrick, of 4 tonnes lifting capacity, and of 8 metres length will be served from a hydraulic operated cargo winch.

4. Accommodations

4.1 Fish Hold

The fish hold will be of about 160 cubic meters capacity, insulated with foam plastic materials, sheathed with timber, and lined with aluminium alloy.

The fish hold will be fitted with plastics or aluminium alloy partitions. The cooling of the fish hold will provide a temperature in range from -2 deg. C to 0 deg. C.

4.2 Living Accommodations

The living accommodations will include four two-berths crew cabins, a single berth cabin for the skipper, a crew messroom, a galley and sanitary spaces.

The furniture will be manufactured of polished hardwood, the table desks covered with plastics "unilame"/formica. The wall of the accommodation will be sheathed and lined with formica panels or glazed fibre boards.

The floors will be covered with linoleum, laid on a layer of litosile. The accommodations will be provided with natural and artificial electrical lighting and forced ventilation. Central heating of the water system.

4.3 Service Accommodations

This accommodation will consist of a wheelroom and a navigation cabin. The wheelroom will be fitted with a control desk, with the transmitter of the steering arrangement, control metering instruments for controlling the work of the engine, and a control device for remote control of the engine work and the controllable pitch propeller. In the navigation cabin a desk for the radio arrangements and navigation desk will be placed.

4.4 Sanitary Accamedations

The sanitary accommodation will contain a washing room equipped with two washing basins a/ Generating set of 22 KW driven by combustion engine, to which additionally a hydraulic pump for driving the deck arrangements will be mounted.

b/ Air compressor of 25 cubic meters capacity, at 30 atmospheres driven by an electrical motor.

c/ General service pump of 25 cubic meters output per hour and a delivery head of 50 m.

d/ Oil fired boiler for the water central heating with a heating surface of 1.75 square meter and output 15750 kcal/hour.

e/ Fuel oil transfer gear pump with an capacity of 0,9 cu. meter per hour driven from an electric motor.

f/ Electric driven centrifugal hydrophore pump of 25 litres per minute capacity, vertical arranged.

g/ Cooling aggregate with an output of about 12000 keal.

Beside the above in the engine room the following arrangements will be fitted:

lubrication oil tank, service fuel oil tank and the compressed air receivers.

6. Electrical and Radio-Navigational Installation

The following sources of electrical energy will be provided: service generator of 22 KW and generator of 22 KW for the generating set.

For lighting purposes and for supplies of motors driving the auxiliary arrangements a 230 volts D.C. installation will be foreseen.

The radio installation and the installation for emergency lighting will be supplied from a storage battery.

and a shower. Hot water will be supplied from an electrical heater. The installation of the sanitary pipelines will be served by a hydrophore, installed in the engine room. A second accommodation will contain a water closet, flushed with sea water with the aid of a hand pump. Further also a washing basin will be fitted. The floor will be covered with tiles and the wall coated with cork spray.

4.5 Store Rooms

The following store rooms will be foreseen: the fore peak, above the main deck for storing dry provisions, the netroom for fishing gear and boatswain's accessories and a paint and lamp store accessible from the main deck.

5. Engine Room

In the engine room the following propulsion units and auxiliaries will be fitted:

> main engine. "Rolls Royce", type DV8TCWM, developing 450 HP at 1200 R.P.M., or
>
> Ruston-Paxman, type 8RPHCMN, developing 450 HP, at 1200 R.P.M. or eventually another engine of similar characteristic indicated by the Purchaser.

The engine will be elastic mounted on washers, and through an elastic clutch drive the propeller shaft. The pumps to the cooling water system and drainage system will be mounted on the engine.

The control gear for the controllable pitch propeller, manufactured by Messrs. Liaaen, will be mounted together with the reduction gear and the clutch in one body casing. In front of the engine the drives for the hydraulic pumps and the service generator of 22 KW will be foreseen. The following auxiliaries will be provided:

The vessel will be fitted with the following radio navigational equipment:

1/ Meanware radio-telephone, type FOKA, with direction finder loop and automatic alarm keying device.

2/ Ultra-shortwave radio telephone type FM-302.

3/ Emergency receiver, type M-113.

4/ Fishing echo-sounder, type SP-402, with indicator.

5/ Radar, type 14/9, of Kelvin Hughes.

6/ Radio direction finder, type Decca Navigator.

Annexure I-G

Specifications of Cutter HT 311 Sk. (GDR) Fishing Vessel

1. Shipbuilding Part

1.1 General Description

1.1.1 Type

Fishing vessel, general arrangement no. 122.00.001 A 01, for trawling in tropical off-shore waters down to 400 m depth of sea. Fish hold provided with cooling plant at ceiling.

1.1.2 Main Particulars

Length overall	24.47 m	80 ft. 3 in.
Length between perpendiculars	21,00 m	68 ft 11 in.
Moulded breadth	6,60 m	21 ft 8 in.
Depth	3,40 m	11 ft 2 in.
Designed draught	2,70 m	8 ft 10 in.
Hold capacity	85,00 m^3	3,002 cu.ft.
Fuel oil provision	17,2 t	16,9 tonnes
Fresh water provision	48,48 m	47 tonnes
Main engine	428 PS	422 HP
Speed	10,5 kn.	
Crew	12 persons	
Operating range	2.500 sm.	

1.1.3 Classification

D S R K A I Fishery

1.1.4 General Construction

Hull in chine system, with raked stem, transom stern and continuous main deck; engine room forward, accommodation before. Deck house with engine easing and wheel house above it. Funnel behind the wheel house on skylight of engine room.

1.1.5 Subdivision

Hull is divided into 5 compartments by 4 watertight bulkheads:

Aft Peak: Steering flat, neeting room and two fuel oil bunkers, one on port and one on starboard side.

Hold: from bulkhead 5 to bulkhead 21.

Engine Room: from bulkhead 21 to bulkhead 33.

Accommodation: under the deck from bulkhead 33 to bulkhead 39, fresh water tank below that Fore peak.

Deck House: situated on the main deck, comprising mess, galley, six-men cabin, WC and lavatory, battery room, ventilator room, engine casing and staircase descent to the accommodation below the deck as well as staircase ascent to the steering flat. Access from the main deck on starboard side.

Wheel House: situated on the deck house before the engine room skylight with funnel and divided into steering room and two-men cabin. Access on starboard side from the deck house by staircase, moreover by exterior door from the boat deck.

1.1.6 Speed and Cruising Radius

Trial speed in deep water without current with recently docked vessel, sea and wind force less than Beaufort 3, will be 10,75 knots.

According to classification the cruising radius is unlimited and amounts to 2,500 nautical miles or 12 days.

1.1.7 Stability and Trim

The values of stability are in accordance with the rules of classification society in all practically occuring conditions of operating. The chosen disposition of tanks enables favourable conditions for trimming.

1.1.8 Volumes of tanks and Rooms

Fuel oil	21,9 m^3	773 cu. ft.
Fresh water	4,8 m^3	169 cu. ft.
Netting room	9,3 m^3	328 cu. ft.
Fish hold without...	85,0 m^3	3002 cu. ft.
Fish hold with cooking plant	65,0 m^3	2401 cu. ft.

1.2 Hull

1.2.1 Material

Structural members upto 12,5 m thickness (0,5 in)

St 38 u-2 = 38 - 47 kp/mm^2

Structural members over 12,5 mm thickness (0,5 in)

St 42 - 3 = 42 - 52 kp/mm^2

1.2.2 Design

Transverse frame system, welded throughout, frame spacing 500 mm (1 ft 8 ins.)

1.2.3 Hull bracings

Are dimensioned in accordance with the rules of classification society.

1.3 Equipment

Deck arrangement is designed for operation in trawling (pelagic or ground). Hydraulic deck equipment consists of one trawl winch in transverse location with two trawl warp drums and one another warp drum as well as two capstans. The trawl warps run over guide rollers to the gallows aft on port and starboard side. Transferring the catch over starboard side by the 2 Mp cod and heaving gear, which passes from the outrigger of the mast to the starboard gallow and is operated by the capstan of the trawl winch. The deck surface between net winch and deck house is subdivided by removable sorting bins. Further devices for operating the fishing gear and the catch are as follows; stern roller on the transom bulwark, several movable bulwark rolls as well as various eyelets, cleats and holding devices.

The access to the fish hold is done by the fish hold hatch in the main deck between frame 13 and 15; near it 5 ice hatches are provided in the main deck. The disposition of the winch on the aft part of the working deck combined with the coincident improvement of the conditions of visibility in the wheel house enables a better teamwork between ship's command and deck hands.

The range of visibility of an observer at the steering stand extends from the stern roller to the aft edge of the sorting bins on deck. For the observer at the chart table in the wheel house, the range of visiblity comprises the whole working deck to the fore-edge of the fish hold hatch.

1.3.2 Rigging

Braced mast at the end bulkhead of deck house with a 0,5 Mp derrick for discharging the fish boxes as well as for general service on board the ship. The mast is provided moreover for the fastening of lanterns, floodlights and aerials.

1.3.3 Ground Tackle

The bower anchors, each of 250 kg, running in hawse holes on port and on starboard side. Starboard anchor is operated as main anchor by means of outboard shot and anchor rope over guide rollers from the anchor drum of the net winch. Port anchor as spare, if necessary to be lowered by trawl warp.

2 outboard shot	19 Ø length 10 m
1 anchor rope	18 Ø length 150 m
1 stream anchor	100 kg.

1.3.4 Hauling Gear

Four double-head bollards, four mooring pipes, ropes and cables according to regulations.

1.3.5 Steering Gear

Balanced streamlined rudder, mounted in the rudder heel and in a self-aligning roller bearing and actuated by hydraulic steering engine.

1.3.6 Life-Saving Equipment

Performance in accordance with the International Convention for Safety of Life at Sea of 1960.

1.3. Doors

All the outside doors are of steel, watertight and spray-proof executed. Inside doors to the lavatory and in the engine room casing are of steel all other are of wood.

1.3. Windows

The wheel house is fitted with rectangular hinged and fixed windows; one of the fixed windows with a clear-view screen. The two men cabin in the wheel house has a rectangular window in profiled rubber as well as a hinged porthole. Above the chart table in the rear side of the wheel house there is a large panorama window in profiled rubber, too. Both hinged and fixed portholes are fitted in the deck house and for skylights, with wash blinds and shield grates where necessary.

1.3 Staircases and Ladders

Wooden staircases lead from the main deck to the accomodation below the deck and to the wheel house.

Netting room, fish hold, engine room, fore peak, boat deck and compass platform as well as the mast are accessible by iron ladders. There are climbing irons in bunkers and tanks.

1.3. Fire Extinguishing Gear

Four foam extinguishers and two CO2-extinguishers are distributed in the various rooms, besides three C-hose pipes with directors and other inventory according to the list of equipment.

1.3. Hatches and Skylights

Hatch of fish hold 1000 x 1600
with cover for access 500 x 600
flush-deck hatch to the netting room 800 x 800
access hatch to the fore peak 600 x 600
height of coaming 460 mm
skylights above the accommodation below the deck and above the engine room casing.

1.3. Railings, Hand Rails and Bulwark

Pipe railing with a height of 900 mm and two rails on the Boat deck; hand rails at deck and wheel house.

Bulwark of 900 mm height on the main deck and on the fore boat deck, provided with wash ports on the main deck.

1.3. Ventilation

Engine room, four-men cabin below the deck and six-men cabin in the deck house are mechanically aired and naturally vented. All other rooms are naturally aired and vented.

1.3. Painting and Cementing

After assembly all structural members are unrusted and preserved in accordance with the regulations for painting. In accessible space in fore and aft body as well as the bilge hats are cemented.

1.3. Inventory

Can be seen from a separate list of equipment.

1.4 Completion

Polystyrol foam is used as insulation material. Lining in the fish hold with plastic-coated hard boards; near the floor the partitions consist of 30 mm pipe. Plastic coated hard boards are also provided for the accommodation.

1.4.2 Deck Covering

Main deck 63 mm, boat deck 50 mm pine.

1.5 Furniture

1.5.1 Two men Cabin

Double berth, two cupboards, one chart shelf, one desk, one chair, one wash-basin, one mirror, clothes pegs.

1.5.2 Six-men Cabin

Three double berths, one table, one corner bench, three cupboards, six clothes pegs.

1.5.3 Four-Men Cabin

Two double berths, one table, one corner bench, four cupboards, one revolving stool, clothes pegs.

1.5.4 Mess - Galley

One table, two wooden benches, one refrigerator, one rinsing basin, one pantry with side board, one gas-oven with three gas-rings, four clothe pegs.

1.5.5 Lavatory and W.C.

One wash-basin, one shower, one mirror, one flushing toilet, two hooks for towels, holder for WC-brush and toilet paper.

1.6 Wheel Room

Chart table, stool, flag shelf and floor grating; moreover all equipment for ship's command for locating fish.

2. Engineering Part

2.1 Main Engine

Maker: VEB Schwarmaschinenbau "Karl Liebknecht", Magdeburg.

Type : 6 NVD 36.1 A N = 428 PS n = 500 r/min
= 422 HP

With indirect cooling and starting by compressed air; are jointly driven;

Three-phase current shaft-driven generator, fuel-transfer pump, starting air compressor with drive of the hydraulic pumps for deck engines by power taking off from the 2nd crankshaft journal.

Remote control and survey devices for main engine are mounted in the wheel house.

2.2 Shafting and Propeller

Shafting comprises:

Reduction gear with hydraulic device for propeller pitch varying, type JM 125

Propeller shaft with variable pitch propeller, abt. 330 r/min.

Remote control for propeller pitch varying and actuating of the coupling is mounted in the wheel house.

2.3 Auxiliary Set

Drive by Diesel engine, type 3 NVD 18, N = 42 PS
= 41 HP
n = r/min

Maker: VEB Dieselmotorenwerk Leipzig
Cooking : indirect
Starting: by compressed air
Three-phase current generator N = 30 KVA

2.4 Pump

1 bilge pump (self-priming rotary pump) $Q = 16 m^3/h$

1 fire service pump (self-priming rotary pump) $Q=16 m^3/h$

1 stand-by lubricating oil pump (gear wheel double pump) $Q = 6{,}3 /5{,}0\ m^3/h$

1 fuel transfer pump (gear wheel pump) $Q = 0{,}25\ m^3/h$

1 rotary pump for supply of sanitary pressure water $Q = 1\ m^3/h$

1 stand-by manual pump for fuel supply $Q = 1{,}7\ m^3/h$

1 stand-by manual pump for pressure water supply $Q = 1{,}7 m^3/h$

1 manual pump for stern tube

1 manual pump for variable gear

1 manual bilge pump

1 manual plunger pump for WC

2.5 Compressors

1 compressor $Q = 7{,}25\ m^3/hp = 32\ kp/cm^2$

1 starting air compressor attached to main engine $Q = 12{,}m^3/h\ p = 30\ kp/cm^2$

1 manual piston compressor $Q = 0{,}8\ m^3/h$

2.6 Tanks

1	supply tank for lubricating oil	abt. 850 1
1	tank for hydraulic oil	abt. 500 1
1	tank for leak oil	abt. 50 1
1	gravity tank for stern tube lubricating	abt. 20 1
1	hydro for tank	abt. 180 1
2	starting air bottles	each 250 1
1	starting air bottle	40 1
1	fuel daily service tank	abt. 300 1

2.8 Piping

The following pipes are provided:

bilge pipe lines, cooling water pipes, fire main and ballast line, fuel pipe lines, lubricating oil pipes, compressed air lines, sanitary lines, hydraulic lines, exhaust lines, pneumatic lines, refrigerating lines.

2.9 Steering Gear

Actuation by electro-and hand-hydraulic steering gear, torque 1,0 Mp according to TGL 21933.

2.10 Windlass

According to the rules of classification society, combined with trawl warp winch.

2.11 Fishing Winches

1 combined trawl warp winch and windlass with hydraulic drive;

number of winch drums;	3
number of capstan drumps:	2
transversally arranged pull max.	8 Mp.
min.	2,1 Mp
rope speed min.	48 m/Min.
Max.	130 m/min

2.12 -

2.13 Refrigerating Plant

Cooling plant at ceiling in the hold to reduce ice losses by smelting and heat penetration from the deck according to special references of VEB Kuhlautomat, Berlin, The plant is designed for an efficiency to - 1°C.

3. Electrotechnical Part

3.1 Ships mains

The power plant is designed for 380 V three-phase current 50 cycles/sec as four-conductor system with a centrally earthed star point. The general lighting is supplied with 220 V alternating current 50 cycles/sec or 24 V 50 cycles. Low voltage consumers and the emergency lighting are supplied by a 24 V direct current system.

The wiring is carried out with plastic covered marine cable of the type NMYY and with screened cable of the type NMYCY, where radio screening is necessary. All switches and installations are chosen according to the class of protection and safety as necessary for their particular location.

3.2 Power Supply

For power supply two constant-voltage generator, each with a capacity of 30 KVA, are mounted in the engine room, One generator is directly coupled with the auxiliary diesel engine while the other is driven by way of Vee-belt by the main engine. During lay days ship's mains may be supplied by means of shore connection with 380 V three-phase current.

The consumers of 24 V direct current are supplied by a storage battery floating with the charging transformer.

3.3 Power Distribution

Power is distributed by a main switchboard situated in the engine room.

The main switchboard consists of the two generator fields with the 380 V, the 220 V and the 24 V consumers and the 24 V field of the battery charging transformer.

Auxiliary switchboard is placed in the wheelhouse, where the recharging appliance of the storage battery and the distribution boards of the 380/220 V and the 24 V consumers as well as the switchboard for the navigation lights are arranged.

3.4 Lighting Installation

Total lighting is subdivided into two independent systems, i.e. into the 220 V lighting and the 24 V lighting.

The lighting of the working deck, the outdoor lighting, the lighting of the fish hold as well as navigation lights, searchlights and Morse signalling light form parts of the 220 V lighting.

Accommodation lighting, mess, engine room and wheel house lighting and that of the remaining spaces form parts of the 24 V lighting which is supplied at ship's mains service by means of a transformer from the ship's mains for the three-phase current.

Emergency lighting in the engine room is automatically switched in; all other 24 V consumers may be operated manually.

3.5 Drives

All electrically driven pump sets and the ventilators are driven by three-phase squirrel-cage motors. According to the wattage they are either directly wired to motor protection relays or to hand operated stern delta switches.

The drives are supplied from the main switchboard. The switchgear installation of the cooling plant are assembled in a separate switchboard of cooling plant.

4. Radio and Navigational Equipment

The following installations are provided for equipment of the cutter:

28 - canal USW marine radio UFS 501
Echo sounder with fish indication HAG 250
Connections for radio plant, Decca Navigator and Autopilot are available.
HV - sounder may be installed.

In case of building in a main engine of the type.

"Caterpiller" D 353 E - TA

The following alternations will take place compared with the original design with " S K L " main engine:

Output diminishes from

N = 428 PS or 422 HP resp.
N = 420 PS or 415 HP resp.

In connection with that a self-priming bilge pump ($Q = 20\ m^3/h$) is additionally built in, driven by power taking of from the 2nd crankshaft journal.

If desired the volume of the fish hold may be increased without cooling plant at ceiling to 89 m^3 resp. 3143 cu. ft resp. with cooling plant at ceiling to 69,6 m^3 resp. 2458 cu. ft. and of the fuel oil provision to 18.5 ft. resp. 18.2 tonnes as indicated in general arrangement no. 122.001 A 10.

Estimated Requirements of Marine Diesel Engines During Fourth Plan

State	35-31 HP	40 HP	56-64 H HP	75 HP	84 HP	140 HP	Total
Gujarat	150	375	375	112	23	15	1,050
Maharashtra	75	450	450	75	38	38	1,125
Mysore	37	188	75	56	19	-	375
Kerala	38	750	450	186	120	52	1,597
Tamil Nadu	38	525	263	75	22	15	937
Andhra Pradesh	37	112	150	37	22	15	375
Orissa	-	18	19	37	37	12	150
West Bengal	15	8	7	38	-	-	38
Laccadives	-	45	22	16	7	-	90
Andamans	-	19	12	8	-	-	38
Goa	-	75	37	19	19	-	150
Pondicherry	-	45	15	8	7	-	75
Total	390	2,610	1,875	637	334	154	6,000

Source: Estimates based on the revised Fourth Five Year Plan.

Annexure I-I

Specifications of Electronic Equipment

Fish Finder (Japan)

Model	Furuno-86/C2 Mark II
Depth Range	0/80, 60/140, 120/200 metres
Paper width	152 mm.
Paper advance	6.3 mm/min.
Type of paper	Dry electro-sensitive
Frequency	200 khz
Power supply	24 V.D.C.

Price landed approx. Rs 4850/-

Furuno Radio Telephone (Japan)

Frequency	2/15 MHZ
No. of channels	6
Control	Crystal
Operation	S.S.B. & D.S.B. (Single & double side Band)
Aerial	Whip type
Power supply	AC 220/230 50 HZ DC 24 volts
Dimensions & Weight	430x350x200 mm. 28 kg. approx.
Power drain	280 watts on transmission 65 " Reception.

Cost C.I.F. approx. Rs 12,000

Marine Radar (Japan)
Type FR - 151 - T.R.

Reflection type	Slotted waveguide
Horizontal beam width	1.8 degrees
Vertical beam width	25 degrees
Rotation	20 R.P.M.
Indication	17 cm dia screen
CHT	aftaglow
Ranges	1/2, 1.5, 4, 12, 32 nautical miles
Minimum	22 metres
Range accuracy	Better than - 1%
Bearing accuracy	within 1°
Powen Supply Bcn	24 V.D.C.

Cost C.I.F. approx. Rs 15,000

Fish Finder "Benmar" U.S.A.

Model	DI - XI
Frequency	125 KHZ
Depth	80 metres
Range	0-80
Speed	One
Paper	Dry
Power Supply	12 and 24 V.
Recording	Conventional
Mounting	Hull
	Price FOB $ 379.95

Radio Telephone (USA)

Model	Skipper 565
Output	65 watts
Frequency	2-4 MHZ
Input	12 V.D.C.
Weight	6 Kilos
	Price F.O.B. $ 299.95

Simrad Partner Sounder

Mod. ER4B with (10 x 10) cm transducer
Fully transistorized
Purpose: Shrimp trawling
Frequency : 38 KHZ
Power supply : 24V DC.
Weight :cabinet: 23 kilos
Operating depths: 0-40, 0-80 fathoms
60 ranges max. 200 fathoms
Accuracy: To be met
Power consumption : 40 watts
Effective white line
Paper : T-16 dry paper (1 roll incl. in price).
(Electro sensitive)
Paper width : 150 mm

Price :	Each N.Kr. 8.000.-
Additional installation cost approx.	Each N.Kr. 500.-
	Each N.Kr. 8.500.-

Simrad Skipper Sounder

Mod. ES2G with (10 x 10cm) transducer
Purpose: Shrimp trawling
Frequency : 38 KHZ.

Power supply: 24V DC.
Net weight: 32 kilos
Depth ranges: 0-40 and 0-120 fathoms
(6 ranges max. 300 fathoms).
Paper: T-16 dry paper (1 roll incl.in price.)
Paper width: 150 mm.
Power consumption: 80 watts.
Accuracy: To be met.
Effective white line.

Price:	Each	N.Kr. 9,900.-
Additional installation costs approx.	Each	N.Kr. 500.-
Total:	Each	N.Kr.10,500.-

Simrad Skipper Sounder

Mod. ES5C with (10 x 15 cm) transducer.
Frequency : 50 KHZ.
Depth ranges : 0-40 and 0-120 fathoms
(6 ranges max. 300)fathoms.)
Effective white line.
Accuracy : To be met. Net weight: Cabnet: 32,5 kilos
Net weight : transducer: 13,5 kilos.
Paper : T-16 dry paper (1 roll incl.in price)
Paper width : 150 mm.
Price SIMRAD T-16 Paper : N.Kr. 45.- per roll.

Price	Each	N.kr. 11.000.-
Additional installation costs approx.	Each	N.kr. 500.-
Total	Each	N.kr. 11.500.-

Simrad Radio Telephone Mod. PA3

4 crystals included in the price.
Simplex or duplex operation in
the marine frequency band from
1,6 to 4 mHz.
Operating voltage: 24 V.
Transmitter and receiver in the same cabinet.
Output power : 60 Watts.

Price	Each	N.kr. 9.000.-
Additional installation cost such as antenna equipment, cables etc., but not including batteries, approx.	Each	N.kr. 1.500.-
Total		N.kr.10,500.-

Simrad Radio Telephone Mod. PB2

4 crystals included in the price.
Voltage: 24V DC.
Output power : 100 Watts.
Simplex and duplex operation in the marine frequency band from 1,6 to 4 mHz
Transmitter and receiver mounted in the same cabinet.

Price:	Each N.kr. 9.600.-
Additional installation costs such as antenna equipment, cables etc., but not batteries, approx.	Each N.kr. 1.500.-
Total:	Each N.kr.11.100.-

Annexure II-A

Minimum Hygienic Requirements for the Fishing Boats and the Processing Units/Peeling Sheds

All the fishing boats, fish processing units and the peeling sheds used in the production of the mater material shall conform to the minimum hygienic standards prescribed hereunder. The inspection agency shall examine the fishing boats, processing units and the peeling sheds, with a view to seeing that these conform to the requirements prescribed in this behalf.

(a) Minimum Hygienic Requirements for Fishing Boats

i) All surfaces and vessels in fishing boats that come in contact with fish shall be kept in clean condition.

ii) Surfaces and fish holds shall be scrubbed and flushed with clean water followed by application of detergent and disinfectant.

iii) Fish shall be stored in such a way that it does not touch either the bottom or the sides.

iv) Wire screens of uniform mesh size held out by wings at a distance of 2.5 cm. (one inch) from the bottom may be used.

v) All fish boats shall carry ice.

vi) After each haul, the catch shall be washed in clean sea water to free it from mud and other dirt.

vii) Immediately after washing, the material shall be stacked in plastic or clean dry wooden containers after mixing with at least 1:1 ice and stored in the fish hold.

viii) Where fish holds are not available, these containers may be stored one on top of the other on deck without the material being pressed.

ix) The boxes shall be so designed and arranged that the ice melt water carrying the slime, blood etc. does not trickle over the other.

x) After disposing the catch from each haul, the deck surface shall be cleaned again in the manner indicated in (ii) above.

(b) Minimum Hygienic Requirements for the Processing Units/Peeling Sheds

I. Raw Material Control

The management shall check the raw material arriving in the processing unit/peeling shed and record the observations in the manner prescribed in this behalf.

II. Sanitary Facilities and Control

i) Separation of Process. The area in which the raw material is received and stored shall be so separated from the area in which the final product preparation or packaging is conducted as to preclude contamination of the finished product. Areas and compartments used for storage of edible products shall be separate and distinct from those used for inedible materials. The fish handling area shall be completely separate from the area used for residential purposes.

ii) Water Supply. There shall be plentiful supply of potable chlorinated water which shall be free from harmful chemicals and bacteria. The consumption of water for every pound of raw material processed shall not be less than 5.5 litres which is considered to be the absolute minimum. If non-potable water is supplied for boilers or other auxiliary services, there shall be no cross connection between the auxiliary water system and the system carrying the potable water. In emergent cases, however, where the potable water is required for boilers and other auxiliary services, a cross connection may be established with the prior permission of the inspection authority.

of stainless steel, aluminium or any other non-corroding non-reacting material.

ii) All food contact surfaces shall be smooth free from pits and crevices, and of non-absorbant type. These shall be capable of withstanding repeated exposure to normal cleaning. Enamelled and wire mesh utensils shall not be used.

iii) The equipment shall be installed in such a manner as would permit easy and thorough cleaning.

iv) Equipment and utensils used for inedible and contaminated material shall be separately identifiable by a mark shape/colour so that these are not used for handling edible products. Waste material shall be frequently removed from the working areas during plant operation and adequate waste receptacles shall be provided for this purpose.

v) Temperature measurement of the cold room chill room and ante-room shall be recorded by an automatic device, particularly so in the freezing plants. The frozen storage and chill storage temperatures shall not exceed - 18°C and + 1°C respectively.

vi) All cooking operations shall be carried out by steam. Autoclaves shall be provided with both pressure gauge and thermometer. Cooling of hot sterilized cans shall be done only in well chlorinated water.

IV. Hygienic Operating Requirements

i) All necessary precautions shall be taken to prevent contamination of the material with any foreign matter.

ii) Vermin and Animal Control.

Effective measures shall be adopted to protect against the entry into the processing areas of insects, rodents, birds, cats, dogs etc.

iii) Personnel Health

Plant management shall take care to ensure that no person while known to be affected with a communicable disease is permitted to work in any area of the

iii) Ice. Ice made in the unit shall be from potable water only and shall be handled, stored and used in such manner so as to protect it from contamination. Where ice made outside is brought in, it shall be tested to ensure that it is made from potable water and is not contaminated.

iv) Lighting. The premises shall be well-lighted. Light bulbs and fixtures suspended over the product or any step of its preparation shall be of safety type or otherwise protected to prevent contamination in case of breakage.

v) Toilet Facilities. Adequate and convenient toilet facilities shall be provided. The toilet room shall have self closing doors and shall not open into the area where the raw material, the final product or ice is stored or where the processing is conducted. Hand washing facilities and soap shall be provided within the toilet area. Potable water shall be supplied for washing purposes.

vi) Hand Washing Facilities. Soap and adequate hand washing facilities shall be provided in each process hall. Potable water shall be supplied for washing purposes.

vii) Cleaning. All the utensils, trays and table surfaces, which come in contact with the processed fish except packaged material shall be washed initially with a cleaning agent, and finally with water having a minimum concentration of 50 parts per million of chlorine. This shall be done before the day's work starts and then at the end of each working shift.

viii) Chlorination. The minimum available chlorine content in the water used for processing shall be maintained at 3 parts per million. Water used for glazing and re-glazing shall be chlorinated to a minimum level of 10 parts per million. Overhead tanks shall be properly cleaned once in a fortnight and kept constantly covered.

III. Equipment and Utensils

i) The peeling and deveining operations shall be carried out on tables. The table top shall be either unit. In order to facilitate the detection of such disease, the management shall conduct quarterly medical examination of the personnel permitted to work in any area of the unit.

iv) Toxic Substances

All rodenticides, fumigants, insecticides or other substances injurious to health, except fire-fighting equipment shall be kept in a separate locked room. All these substances and equipment shall be handled by trained personnel only.

v) Drainage

There shall be adequate drainage facilities for carrying away water used in the factory premises and to discharge it into a channel at least 3 metres (10 feet) from the unit. The drainage system inside the factory shall be properly covered. The sewage from the toilet shall be disposed off in such a manner that the water shall be inaccessible to flies and the unit's water supply not contaminated. On no account there shall be any accumulation of water including waste or rain water in the premises.

vi) Floor

The floor of the unit shall be smooth and cemented and the sloping shall be such that the water always runs into the drain.

V. Personal Hygiene

i) All persons working in the processing area shall maintain a high degree of personal cleanliness while on duty. They shall wear properly sterilized white overall, gloves and head cover which shall be supplied at the beginning of the shift.

ii) The workers shall wash their hands with potable water and soaps as often as necessary and especially after each absence from the processing hall.

iii) Spitting and use of tobacco shall be prohibited in the premises. A separate eating place shall be provided and eating at other places shall be prohibited.

Processing in Factories - Methods

Freezing of Prawns

The prepared raw material is brought to the factories for grading and freezing. The materials are graded according to size and packed separately for different types of pack. Prawns are packed into three major types.

Annexure II-B

I.- Design for Peeling Shed Prepared by the CIFT

1. Land

The plot of land should be selected near a water front in order to facilitate easy transportation of the raw material. The plot required for the design given in the lay out is 90'x36'.

2. Building

The building should be constructed in the east-west direction so that the direct sun light will not fall in the room in the morning and in the evening. The size for the doors and windows should preferably be as below:

3. Doors & Windows

Door D - 3' x 6'9" with double panelled shutters and with ventilators 3' x 1'6"

Door D1 - 3' x 6'x6" with single panelled shutter

Door D2 - 3' x 6'6" wire netted self closing

Door D3 - 3' x 6'6" insulated with 2 layers of 2" thermocole

Window W - 5'6" x 4'6" wire netted (nylon) net with exhaust fan

Window W1 - 5'6" x 4'6" wire netted (nylon) net with exhaust fan

II. Peeling Hall

Dimensions: 62'x16'x10'

There should be a high degree of ventilation and lighting in this room. Fly control nets should be attached to the windows and doors of this hall and the doors should be of self closing types. At any convenient place of the halls there should be two cement tanks of dimension 4' x 3' which serve for dipping the basins and tubs in any disinfecting solution.

III. Ice-cum-Raw Material Storage Room

Dimensions - 12'x10'x10' (inside measurement)
with 4" thermocole insultation.

The floor should have a slope to one side so that melted ice water if any will easily flow out. The ice should never be kept in contact with the floor. They should always be kept over perforated wooden platforms of 4" height.

IV. Utensils

Table. The quantity of prawns which an average worker can peel in a day is 40-45 kg. (depending upon the size of the prawns). So in order to handle 2000 kg. per day there should be 50 workers. Each worker should be given a minimum space of 2½' on the peeling table. In such a case a table of 7½' long and 3' broad can accommodate five persons, three on one side and two on the other. According to this calculation the total number of tables required to accommodate fifty persons will be 10. The tables should be arranged in two rows in the lengthwise direction of the hall leaving enough space between two rows.

Construction of Details

The tables are made of re-inforced concrete with a thickness of 3" and a height of 3' from the floor. The top portion of the table should be plastered and well polished with cement. There should be a hole of 2" diameter on both ends of each table so that water does not accumulate on the table during working. There should be three pipe points on each table so that there is a ready supply of water for the work on the table. Suitable slope for water to drain through the end holes may be given.

Supporters: 3' x 9" x 2'9" on each end of the table. 3'x4½" x 2'9" on the centre of each table.

Cost : Approx. Rs 800

Basins : Made of aluminium

Diameter - 12"
Nos. required 60
Cost - Rs 200

Tube : Made of galvanised iron, proous and cirsular in shape.

Diameter - 3'
Height - 1'
Nos. required- 50
Cost - Rs 1,250

V. Drainage and Disposal of Waste Material

The peeling hall should be fitted with good drainage facilities. There should be drainage channels on all the four sides of the hall. The water coming from each table will be taken by small channels are connected to the main channel. The water from the peeling hall, from the raw material storage and the ice storage room will join together in a place outside the building and will be disposed to the river water at a point of about 6' from the shore.

VI. Fly Control

Measures for controlling flies should be aimed at destroying both maggots and adults. The peeling hall, therefore, should be kept perfectly neat and clean. All the traces of waste should be cleaned up at the end of the day and floors well washed. There should be no cracks or crevices which will trap waste or fish juice. Drainage of the slab, spaces under benches, sinks and the base of the walls should receive special attention - loose tiles if any should be firmly fixed. The raw material and ice storage rooms should be washed thoroughly at least once a day. The head and shell of the prawns should not be heaped in the premises of the shed. They should be removed regularly and frequently. The floorings of the peeling hall should be given a spray with sodium hypochlorite solution of 800 ppm strength at least once in four hours which will to a great extent remove the fish smell thereby preventing the entry of flies. The halls should be provided with self closing fly control net containing doors and windows. The premises of the peeling shed can be sprayed with an insecticide.

VII. Lighting

Proper lighting results in the following benefits. Increased production resulting from greater efficiency, better workmanship, less eye strain, reduction of accidents and better sanitation. It is always preferable to use lights similar to day lights (Lamp F.C.) Tubelights are the best for this purpose. In the peeling hall there should be a minimum of 10 such lights one tube light in the centre of each table at a height of 5' from the top of the table.

Approx. cost for electrification - Rs 1,000

VIII. Rest Room

A rest room of the size of 12' x 6' with 4 wash basins to wash the hands and provided with mirrors and detergents or soap may be given for the workers to wash their hands clean before the work is started and in between when they go to lavatory clean towels may also be provided.

IX. Lavatory Facilities

Standard: One latrine for every twenty five females and one latrine for every twenty five males (for males one latrine for every twenty five upto hundred and then one for every fifty will be sufficient).

In the case of urinals the standard is one for every fifty males upto 500 and thereafter one for every hundred will be sufficient. But in the case of females the same rule applies to latrines should be st strictly followed. According to this calculation there should be four lartine-cum-urinals in the model peeling shed under description.

Approx. Cost of construction - Rs 2,000
(This includes cost for construction
of septic tank)

X. Overhead Tank

Capacity of overhead tank required for working 2,000 kg. prawns per day.	-	Rs 5,000 gal.
Height of the tank from ground level	-	20'
Approx. cost of construction with pipelines.	-	Rs 8,000

If municiapl water is not available the cost will be higher because in such case a ground storage tank and a pumping unit will become necessary.

VI. Weighing Room

A weighing room for weighing the incoming prawns is provided with dimension 8' x 6' x 10'. There is a passage of 6' width between the weighing room and the peeling hall. The floor for this passage should be constructed in such a way that it should have slope towards the western side, so that no water from the main hall enter the raw material storage room.

The open space between the landing jetty and the weighing room (8' width) should be cemented.

Design for a Peeling Shed

(Capacity - 2,000 kg per day)

Without refrigeration

Building	Approx.	Rs 12,000
Utensils	"	Rs 2,000
Insulation	"	Rs 4,000
O.H.T. and pipelines		Rs 8,000
Lavatary facilities		Rs 2,000
Lights		Rs 1,000
Rest room and cementing open space near jetty		Rs 3,000
		Rs 32,000

(Plot extra - area of the plot required - 90' x 36')

Staff

Category		Nos.
Technologist	-	1
Machine room (only if refrigeration is there)	-	1
Workers (Females)	-	50
Workers (Males)	-	5

Annexure II-C

Standards of Quality for Dried Fish

General: Dried fish for export should be wholesome. No pit-cured fish or fish oozing with water ("Pachhapad", "Semi-dried", "Half-dried", "Soft-Dried") or having 'red' (bacteria) or mould attack (fungal attack) or maggot-ridden or insect infested fish or reconditioned fish will be permitted for export.

Sl.	Variety	Scientific (Species)	Method of cure in brief	Standards of Quality: Size	Appearance	Smell	Dryage	Foreign matter	Other Remarks
1.	Seer	Cybium	Cured with salt as keelam or as Kandam or chunk only. May be with or without heads. An exception to be made for acceptance in split open form for Seer fish from the Malabar Coast.	37.5 cm or above	Colour will be brown or characteristic colour of well dried good seer fish	should not be that of rancide or decomposed smell	Moisture not above 45%	Nil by sight	Fish flesh should be firm and not come off in shreds on examination. Loose pieces can be allowed to the extent of 5% by weight.
2.	Angulia	-do-	-do-	Below 37.5 cm	-do-	-do-	Dried well & moisture not above 40%	-do-	-do-
3.	Balyaa	Thynnus	-do-	Above 25 cm	Dark coloured	-do-	-do-	-do-	-do-
4.	Parava	Caranx	-do-	-do-	Brown coloured	-do-	-do-	-do-	-do-
5.	Katta	Chorinemus	-do-	Above 30 cm	-do-	-do-	-do-	-do-	-do-
6.	Koduva	Sciaena sp. Pseudosciaena	-do-	Above 60 cm.	-do-	-do-	Dried well and moisture not above 45%	-do-	-do-
7.	Lavaya	Serranus	-do-	25 cm & above.	-do-	-do-	Dried well and moisture not above 40%	-do-	-do-

Contd..

Sl.	Variety	Scientific (Zoological)	Method of cure to adopt	Standards of Quality Size	Appearance	Smell	Dryness	Foreign matter	Other remarks
8.	Sprats	Stolephorus	Sundried and not salt cured	Average above 4 cm with 5% tolerance	White or dull coloured or brownish coloured	-do-	Dried well and moisture not above [illegible]%	[illegible] of sprats of any other fish or mixture of other varieties of small fish should not be more than 5%. Acid insoluble ash can be 1%	-do-
9.	[illegible]	-do-	[illegible] in gill [illegible], fish is not salted	Average above 3.5 cm with 5% tolerance	-do-	-do-	-do-	-do-	-do-
10.	[illegible]	Dussumieria acuta	Sun dried and not salt cured	Below 3 cm	-do-	-do-	-do-	-do-	-do-
11.	Prawns without shell	Penaeus Metapenaeus para penaeopsis	Boiled in brine heads and shells removed and pulp dried	Over 1.5 cm	Orange to pink in colour	-do-	Moisture 10 to 15%	Heads, eyes, shells, tails of prawns, broken pieces of prawn pulp and small dust will add to [illegible]. In any case these should not exceed 5%	Acid insoluble ash and other [illegible] should not exceed 1%
12	Prawns	Penaeus	Sun dried	-do-	-do-	-do-	-do-	Broken pieces of prawns and [illegible] should not exceed 5%	-do-
13.	Shark	Carcharinus, Sphyrna, Pristis Galeocerdo	Salt-cured as fillets or as [illegible]	As pieces being held together at the dorsal or can be in the form of fillets	White or whitish on the flesh side	Characteristic smell of shark (slightly pungent)	Well dried moisture not to exceed 35% (A tolerance of 5% may be allowed in individual cases)	Nil by sight	[illegible] tolerance of [illegible] should be allowed for [illegible] pieces

contd..

Sl.	Variety	Scientific (Species)	Method of cure in brief	Standards of Quality					
				Size	Appearance	Smell	Texture	Foreign matter	Other Remarks
14.	Maduwa	Trygon, Myliobatidae, Rhynchobatus Rhinobatus	-do-	-do-	-do-	-do-	-do-	-do-	-do-
15.	Anguluwa	Arius	Cut open longitudinally entrails removed & fish split open, or Keelamsu salted & dried with or without head	Above 10 cm	Whitish to dull brown	Should not be that of rancid or decomposed smell	Dried well and moisture not to exceed 35 to 40%	-do-	-do-
16.	Anguluwa	-do-	-do-	-do-	-do-	-do-	-do-	-do-	-do-
17	Hurulla	Sardinella Sirm	Salt cured in the round form with guts	Above 7 cm.	White to Brown	-do-	Dried well and moisture to exceed 40%	-do-	Fish flesh should be firm and not come off in shreds on examination.
18.	Soodyya	Sardinella	Cured with salt in the round form	-do-	-do-	-do-	-do-	-do-	-do-
19.	Morello	Hemirhamphus	Salted & dried in the round form	15 to 30 cm (Beak to tail)	-do-	-do-	Dried well & moisture not to exceed 35%	-do-	Acid insoluble ash not to exceed 1%
20.	Venganasa	Pellona	Cured with salt in the round form and well dried with guts	Above 6 cm	White to Yellow	-do-	-do-	-do-	-do-
21.	Parawa small	Caranx (Small)	Cured with salt in the round form and well dried without guts	Below 25 cm	White to light brown				
22.	Kumbalawa	Rastre	Cured with salt & dried without guts	Above 10	White to brown	-do-	Dried well and moisture not to exceed 40%	No free salt except encrustation of salt in the case of dry cured to the extent of 4%	

Contd..

Sl.	Variety	Scientific (Species)	Method of cure in brief	Standards of Quality					
				Size	Appearance	Smell	Drying	Foreign matter	Other remarks
23.	Tinodaya (Dried Grade I)	Iusumeria	This is sun-dried in the round form & not salted	Above 6 cm	Natural colour of the fish but dull and not brilliant	Should not be that of rancid or decomposed smell	Dried-well moisture not above 20%	Broken bits of Thondays or any other fish or mixture of other varieties of small fish should not be more than 5% Acid insoluble ash can be 7%	
24.	Ocova Keelam	Lethrinus; Aprion; Lutjanus; Caterina; and Pristipoma	Cured with salt as Keelam and dried with or without heads	Above 25 cm.	Light yellow to dark brown	Should not be that of rancid or decomposed smell	Dried well moisture not more than 35 to 40%	Nil by sight	A tolerance of 5% by weight should be allowed for loose pieces
25.	Jeela	Sphyraena	Split open or Keelams	Above 22.5 cm	Dark coloured	-do-	Dried well moisture not above 35%	-do-	-do-
26.	Valaikandam	Chirocentrus	Fish removed of guts. Cut into pieces, cured with salt and dried	Above 10 cm	Whitish to dull brown	-do-	Dried well & moisture not to exceed 35%	-do-	-do-

Source: Export Inspection Council.

Dryfish items not at Present Included in the List of Specifications

Sl.	Variety	Scientific name (Species)	Method of cure in brief	Standards of Quality					
				Size	Appearance	Smell	Dryage	Foreign matter	Other Remarks
1.	Thallapath	Histiophorus	Head and viscera removed. Then cut open in the split open form or as Keelam or as strips. If the fish is very big in size say above 30 cm fish cut into smaller pieces, salt cured and dried.	Above 30 cm if the fish is one piece or if in pieces should be above 20 cm. pieces from a fish which is very big say 30 cm. and above.	White to brown	Should not be that of rancid or decomposed smell	Moisture not exceeding 45%	Nil by sight	Nil
2.	Shark Stripe without skin - Fine (wagreoberi)	Prepared from Carcharinus sp.	Dressed flesh pieces of shark fish without bone or skin or fin and cured with salt dried	Pieces above 19 cm.	White to ashgrey or flesh coloured	Characteristic smell of shark flesh slighty pungent	Moisture not exceeding 35%		Nil
3.	Moothilia	Elacate sp.	Salt cured and dried in the split open form or as Keelam without guts with or without heads	Above 15 cm.	White to ashgrey	Should not be that of rancid or decomposed smell	-do-	-do-	-do-
4.	Pulusso	Lactarius sp.	Salt cured & dried in the round form with or without guts. May be cured also in the split open form.	Above 8 cm.	Light dark coloured	-do-	-do-	-do-	-do-
5.	Thondaya salted & dried	Dussumieria sp.	Cured with salt in the round form only and dried	Above 7 cm.	-do-	-do-	Moisture 35 to 40%	-do-	-do-
6.	Bolan	Decapterus sp. Caranx sp.	-do-	-do-	White to light dark	-do-	Moisture 35%	-do-	Loose salt used at the time of packing to the extent of 1% wt. be allowed, but this will add to tare.

Contd..

Sl.	Variety	Scientific name (Species)	Method of cure in brief	Standards of Quality					
				Size	Appearance	Smell	Dryage	Foreign matter	Other Remarks
7.	Kolli (Unsalted)	Excoastus sp	Dried in the sun in the whole form. No salt added.	Above 8 cm.	Light blue to dark		Moisture not to exceed 25%		Nil
8.	Kolli (Salted)	-do-	Salt cure in the round form and dried	-do-	-do-	-do-	Moisture not above 35%	Acid insoluble ash can be 5% be weight.	Nil
9.	Salaya (Oil sardine of Malabar)	Sardinella Longiceps	Cured with salt after removing the viscera & dried	Above 7 cm.	Greenish	-do-	Moisture not to exceed 45%	Nil by sight	Salt as crystal or powder used for packing not by weight and will add.
10.	Salaya (Sardines of E. Coast)	Sardinella gibbosa Sardinella fimbriatta Sardinella albella Coilia sp.	Cured with salt in the round form and dried. Guts not removed.	-do-	-do-	-do-	Moisture not exceeding 40%	-do-	

Source: Export Inspection Council.

Annexure II-D

Details of Specifications for Fishery Products

(A) Shrimp/Prawn, Frozen[1]

	Characteristic	Requirement	
		Whole type and HL type	
		Grade 1	Grade 2
i.	Colour of shell	Natural colour characteristic freshly caught prawn	slightly dim or faded
ii.	Colour of flesh	Characteristic	Slightly discoloured
iii.	Black discoluration of shell or meat	Nil	At the shell joints only
iv.	Texture of meat	Firm and consistent	Not mashy but tending to become lose
v.	Odour	Characteristic odour of freshly caught prawn	Absence of any off odour
vi.	Total plate count at 37°C/gm. Max.	..	..
vii.	E.coli count per gram-Max	..	..
viii.	Coagulaze positive Stap Staphylogoccus, count/gmr.Max	..	..
ix.	Salmonelle and other pathogenic organisns	..	..

---

[1] Source: Fish Inspection Rules, 1964.

Details of Specifications for Fishery Products

(A) Shrimps/Prawn, Frozen

	Characteristic	Requirement P and D type Grade 1	 Grade 2
i.	Colour of shell	..	..
ii.	Colour of flesh	Characteristic colour	Slightly faded
iii.	Black discoluration of shell or meat	Nil	Nil
iv.	Texture of meat	Firm and consistent	Slightly mashy
v.	Odour	Absence of any off odour	Absence of any off odour
vi.	Total plate count at 37°C/gm. Max.	..	..
vii.	E.Coli count per gram-Max	..	..
viii.	Coagulaze positive Staphylogoccus, count/gm. Max	..	..
ix.	Salmonelle and other pathogenic orgains	..	..

Details of Specifications for Fishery Products

(A) Shrimps/Prawns, Frozen

	Characteristic	Requirement	
		Grad Cooked type	
		Grade 1	Grade 2
	Cha		
i.	Colour of shell	..	..
ii.	Colour of flesh	Characteristic colour	Faded
iii.	Black discoluration of shell or meat	..	..
iv.	Texture of meat	Firm and consistent	Firm but br breaking into pieces when pressed between the fingures
v.	Odour	Odour of freshly cooked prawn	Absence of any of odour
vi.	Total plate count at 37°C/gm. Max.	200,000	200,000
vii.	E.Coli count per gram-Max	20	20
viii.	Coagulaze positive Staphylogoccus, count/gm. Max	100	100
xi.	Salmonelle and other pathogenic organisns	Nil	Nil

(B) Shrimp/Prawn, Canned[2]

B. SPECIFICATIONS FOR PRAWNS (SHRIMPS) CANNED IN BRINE OR DRY PACKED

**1. The contents of the can on opening shall present a good apperance and shall not display any appreciable disintegration. Pieces from which portions have separated out would be treated as disintegrated units. The proportion of disintergrated portions of prawns, calculated on the basis of the drained weight, shall not exceed 5 per cent, by weight, based on the average of 5 cans.

ii. The brine, if used, shall be clear and not discoloured and shall not jell when stored at low temperature (above 4 degrees C).

iii. The surface of the prawns shall not appear slimy to the tough. The meat shall be soft but firm and shall not crumble to granular form when pressed between the fingers.

iv. The prawn pieces shall not be pressed together and it should be possible to separate the pieces easily. The pieces shall be of uniform size and shall be clean and free from loose hanging pieces of meat.

v. The material shall have the odour flavour of freshly caught and cooked prawn meat and shall be free from scorched, bitter or any objectionable flavour.

vi. The material shall be free from a pale bleached colour with a greenish-yellow tint indicative of pre-processed spoilage. The material shall be free from any black discolouration.

The material shall free from dirt, insect or hair or other extraneous matter. It shall be free from bits of veins, shell particles and pieces of appendages.

viii. The material shall be free from any poisonous and deleterious substances.

---

[2] Source: Fish & Fish Products (Inspection) Rules 1964 as amended.

(C) Froglegs, Frozen [3]

i. The froglegs shall be three types namely creamy white or light pink, brown and blue.

ii. The froglegs shall be either wrapped individually in polythene film or other suitable covering or frozen in blocks.

iii. The froglegs shall be completely free from skin, and any foreign matter. They shall be well trimmed, shall be reasonably free from blood clots and shall not have black discolouration due to spoilage.

iv. The froglegs shall not show any signs of spoilage and shall not have any off odour when thawed and they shall have a soft and firm texture.

v. The drained weight of the froglegs packed in any given container shall be not less than that d declared on each containers.

vi. The froglegs packed in a container shall be uniform in size and the size count of the froglegs shall confirm to that declared on the container.

---

[3] Source: Export of Froglegs (Inspection) Rules, 1965.

(D) Sharkfin

Apperance	Healthy
Colour	White, black or spotted characteristics of the species.
Odour	Characteristic odour of dried meat but shall be free from any of odour.
Grade	
(a) Small	Fins weighing 50 g.aand more.
(b) Medium	Fins weighing 51 to 150 g.
(c) Large	Fins weighing 151 and above.
Moisture % - Max.	10
Nacl % - Max (on moisture free basis)	3
Acid insoluble ash % - Max.	1
Meat % - Max.	10

The fins shall also be free from salt or lime excrescence, fungal, insect and mite infestation. It shall also be free from any visible contamination.

4/ Source: ISI Specifications.

(E) Fishmaws[5]

Apperance	Healthy, free from blood spots.
Odour	Characteristic fishy, but free from bad odour.
Sticking property	Not more than 10 per cent of the sample should stick together due to gluey nature of the surface.

Grading

a.	Tinny	Maws weighing 35 g. and below.
b.	Small	Maws weighing 36 g. to 100 g.
c.	Medium	Maws weighing 171 g. to 120 g.
d.	Large	Maws weighing 171 g. to 250 g.
e.	Jumbo	Maws weighing above 250 g.

Moisture % - Max	6
Acid insolubles - Max	5
Ether extractives % - Max	1
Solubility incold water % - Max	15

5/ Source: ISI Specification.

Fishery Products, Canned[6]

Characteristic	Requirement				
	Prawn	Pomfret	Sardine	Mackerel	Tuna
Vaccum of the can in mm	100				
Head space of the can in mm	5-100				
Drained weight of the contents of the can, as percentage of net weight Min.	65	66	70	65	70
Sodium chloride in brine, percent by weight - Max	3-5				
Acidity of brine as citric acid, percent by weight - Max.	0.06-2				
Proportion of water in oil% Max (V/V) (in oil packed sample)	-	10	10	10	5
Colour	Characteristic colour of the species packed.				
Odour	Characteristic odour of the species packed.				
Flavour	Characteristic flavour of the species packed.				
Texture	Soft & firm				
Foreign matter	Nil	Nil	Nil	Nil	Nil

---

[6] Source: I.S.I. Specifications.

F Fishery Products, Canned

Characteristic	Requirement				
	Prawn	Pomfret	Sardine	Mackerel	Tuna
Percentage of detached or broken pieces or drained weight - Max	5	5	5	5	5
Artificial colouring matter or firming agent	Nil				
Microbiological activity both at 37° and 55°C	Nil				
Can exterior	Should not be rusted				
Can interior	Should not be affected				
Trace lements. 1) Arsenic PPm Max	1				
2) Lead PPm Max	5				
3) Copper "	12				
4) Zinc "	50				
5) Tin "	250				

(G) Fishmeal[7]

	Grade I	Grade II
Moisture % by weight - Max	10	10
Crude Protein % by weight Max	60	10
Crude fat ether extract % by weight - Max	10	10
Acid insoluble ash % by weight - Max	3	5

In addition the specifications stipulate that:

(a) the particle sizes shall be such that all pass through 2.8 mm. I.S. Sieve.

(b) the material shall be free from adulterants, inspect of mite infestation and from visible fungal growth.

(c) The material shall be free from Salmonella.

---

[7] Source: ISI Specifications.

Annexure II-E

Schedule of Deductions for Scored Factors in Respect of Frozen Shrimp (ISI Specifications)

State of the material	Factor	Extent of quality variation	Point Deductions
Frozen state	Dehydration	Upto 5 per cent	0
		5 to 15.0 per cent	3
		Over 15.0 per cent	6
	Discolouration of shell and meat	Nil	
		Below 2% by count	
		2 per cent to 5% or part	2
		(Tolerance limit 70% by count)	
Thawed state	Deterioration with spoiled pieces	Slight off odour with spoiled pieces below	2
		Moderate off odour withspoiled pieces between 15.1 and 25% by count (Tolerance limit 25%) by count	21
Black spot on shell meat		Nil 5%	0
		Below 5%.	1
		Each additional 5% or part	2
		(Tolerance limit 75% by count)	

State of the material	Factor	Extent of quality Variation	Point Deductions
Broken and damaged pieces		Below 3 per cent	0
		2 to 3 per cent	2
		Every additional 3 per cent.	
		(Tolerance limit 50 per cent by count)	
Legs, bits or veins, loose shell etc.		Below 3 per cent	0
		Above 3 per cent	2
		For every additional 3% by count (Tolerance limit 50% by count)	
Foreign matter		One piece	1
		2 piece	2
		Over 2 pieces	4
Uniformity of size: Fairly small or fairly large		Each 3 per cent	2
Too small or too large		Each 3 per cent	2
Cooked State	Texture	Slight toughness	2
		Moderate toughness	4
		Excessive toughness	11

Annexure II-F

Quality Control and Sanitory Regulations in Mexico

Freezing Plants

1) not carry bacteria and other micro-organisms harmful to health, to washing with chlorinated water and the working equipment and workers;

2) not have dark spots and refrigerate the product as quick as possible. Boats with freezing facilities should should take care of the brine used;

3) Contain no veins;

4) In IQF, the product must not carry shells, pieces of shells and other foreign objects;

5) Not carry in IQF, pieces of shrimp or shrimp that is spoiled or damaged;

6) Not contain dehydrated shrimps;

7) Be uniform in size - by putting on trays of uniform size and grade;

8) See that the working personnel shall be forbidden to eat in the working areas, spit in the working areas, smoke, chowgum, or chat in the working area;

9) See that the personnel shall be required to wash their hands with water, soap and antiseptic solutions of chlorine, Iodine, etc. and have clean finger nails, uniforms, hair nets caps and if gloves are used, they should be washed with soap water and antiseptic solutions;

10) See that if a person while working is obliged to touch some part of his own body, he must re-disinfect his hands and finger nails before touching the product with his hand again;

11) See that the waste separted from the clean shrimps are kept separately.

12) See that all personnel shall fulfill the requisites of the health and public welfare rules as well as those of federal labour law.

Suggestions for Ships to Obtain More Hygienic Product and Greater Benefit

After un-loading, the boat before setting sail again shall follow the hygienic standards indicated below:

1) Clean out residue, left over fish and remove the ice which has been used to many times. The hold should be washed with detergrants and chlorinated water and by brushing walls, floors and doors of the hold;

2) Ass working utensils on board should be washed with detergent and chlorinated water;

3) After each day's fishing, nets should be washed with clean salt water;

4) The crew should maintain strict body hygiene to avoid contamination of the catch. Especially with regard to hands and feets;

5) The crew should be responsible to see that the product taken on board is of high quality and sufficiently clean to avoid contamination;

6) It should prohibit to have animals on board;

7) Any person suffering from a respiratory ailment shall take care to avoid contamination;

8) All catch should be placed on ice or refrigerate with a least possible delay;

9) Ice used for product conservation should be chlorinated at 5 ppm;

10) Brine in the refrigeration equipment of the ship should be changed at least once per yoyage;

11) Ice used for shrimp shall not be used for fish, sharks, snils; turtles; etc;

12) It should be made to ice the product without pilling on too many boxes;

Project for Improved Quality and Hygiene Unloading the Catch at the Docks

1) Water used to thaw the iced shrimp in the ships coolers should be free of bacterial contamination;

2) Implements used in unloading such as foraks, shovels, baskets etc. should be absolutely cleaned and rinsed with chlorinated water;

3) Contract between the fish or shrimp and the floor of the deck should be avoided;

4) Shrimps should not be left out in the open and in the sun more than 15 minutes without ice;

5) After unloading, all utensils should be washed with brushes, water, soap and chlorine before putting them away;

6) One ships with freezing sustem thawing should also be carried out using either fresh or salt, chlorinated or clean water;

7) When several boats arrive simultaneously care should be taken to unload only those which can be handled properly;

8) When hauling the product from the dock to the plant no heavy tools which might contaminate shrimp should be carried.

Receiving and Selecting the Shrimp

1) Before initiating processing the various tools and machinery should be clean with chlorinated water;

2) Hoppers should contain chlorinated water and be cooled by ice and refrigeration;

3) Shrimp waiting for selection should be covered with chlorinated water to protect it from dust and insects;

4) The receiption room should be ventilated;

5) Water in the hoppers should be changed often;

6) Care should be taken to assure uniformity of size according to established international regulations;

7) All workers should be completely uniformed and clean;

8) The layers of ice should be sufficiently thick to maintain the separation of the shrimp;

9) When work is completed all machinery, floors, walls, instrument

Peeling and Deveining of Shrimp

1) All personnel should be correctly uniformed. They should wash their hands with soap and water and chlorinated solution. Finger nails should be clean and short;

2) All utensils should be washed well in chlorinated water;

3) Peeling machines should be rinsed with chlorinated water - this should be done every two hours;

4) Working areas should have fans or ventilators to prevent airborne bacteria, dust etc.

5) Only the amount of shrimp that can be processed with ain a certain length of time should be thawed at one time;

6) The trays and plastic sheets which carry the shrimp to the freezing room should be kept perfectly clean and disinfected;

7) Processed and inspected shrimp should be frozen as quickly as possible.

Freezing, Packing and Shipping

1) Freezing room personnel should wear disinfected working equipment;

2) On placing trays in the freezer care should be taken not to put one tray against another;

3) Before packing, the shrimp should be inspected for pieces, veins, sports, spoiled shrimp etc. and that the polythylene packs are not done;

4) The boxes or masters should be clearly market with numbers and letters visible at normal distances.

Annexure II-G

(**) Grading Form for Fish, Shell Processing Units & Peeling Sheds

Permit No............District..........Name of owner........

Year.................State.............

Location of Processing Unit

	Scope
Consignment	44
Sanitation	56
Construction	
Location: in sanitary surroundings	5
Building: on solid footings, of sound and solid construction watertight, walls and roof.	4
Layout: in proper order to continuous flow of operations.	4
Separate Rooms: for cutting, cooking and storage; adequate floor space for these and other operations, separate cloakrooms.	6
*Floors: cement or tongued and groowed, watertight guttered and sloped to drain.	5
Walls and ceilings: sheathed and painted or joists studding, rafters and roof exposed, but painted or whitewashed.	
*Drain: discharging below high water mark or into running water or into ceaspool at least fifty feet from cannery. All points of discharge atleast one hundred feet from seawater intake. Constructed watertight with soldered seams.	6

	Scope
*Ventialtion: Hoods or ventilators over cooking vats, windows and doors shall be screened and adequate measures taken to exclude files and insets.	4
*Previes: two separate privies, either flush toilest or privies with metal receiptacles.	5
Sanitation	44
*Boats: free from bilge water, kept clean provided with compartments to carry fish. Compartments covered.	5
*Water Supply: preferably municipal water supply or bored well with cased mouth, or spring well cased, or unpolluted seawater. If a tank it used, it must be kept clean and covered.	7
*Refuse Removal: removal daily receptacles kept clean and sanitary.	6
*Surroundings: kept clean from offal and refuse	5
*Processing floors: cleaned daily, clear and unobstructed at all times to facilitate cleaning.	5
Cookers, Tanks, Boxes: cleaned daily.	5
*Tables: washed several times daily; kept clean during operations.	5
*Utensils: cleaned periodically during operation, sterilized atleast once a day.	5
Help: cleanliness in dress and person, meat handlers washing hands frequently.	5
*Foreman and Manager: of clean appearance.	4
*Smoking and Spitting: prohibited inside factory	4
Total score	100

	Score
Equipment	59
Operating Methods	41
*Fish Pens, Tanks or Boxes: sufficient capacity to hold daily receipts of fish of shell fish	4
Cutting, Peeling and devening tables: hardwood tops for cutting tables, hardwood non-corrosive and nourished metal.	4
Washing Troughts or Sinks: enamel, metal or metallined, or from other impervious material, free from rust; adequate number.	5
Cookers: adequate number, easily cleaned and drained.	4
*Picking, cutting, shucking and packing tables: top of enamel, rust-resisting metal or other i impervious material; hardwood cutting boards.	6
*Refuse receptacles: Watertight barrels of solid construction, watertightscows; concerte bins, properly drained.	4
Water pump and tank: electric.	4
Plumbing: in good condition with outlets over all wash through and sinks, Steams pipes insulated	4
Plumbin Hose: attachable to water and steam outlets over all we capable of reaching all parts of cannery.	5
*Exhaust apparatus: exhaust box for vaccum sealer	3
*Retort: gauges, thermometer, bleeders inproper position.	3
*Dishes: non-corrosive, rust-resisting metal or other impervious material.	4
*Wash basin: with outlet to drain, running waters (hot and cold), soat, clean towels	4

	Score
*Aprons, Caps: aprons or overall sand head covering for all employees to be worn inside cannery only.	4
Operating Methods	
*Fish and shell-fish; held properly cooled (crushed ice, cold room, cold running water) from time of landing until ready for processing or, frozen fish held at -20°C if in cold storage over one week; fatty fishes well glazed.	5
*Fish culled while butchering shucking and packing All soft, spoiling fish and dead shell fish discarded.	6
*Fish washed throughly: in running water blood scrubbed away along backone; clupeoid fish washed free of scales, free from slime in shell fish	4
Each batch packed before new batch brought to picking and packing table/Cans exhausted: cans sealed by vacuum sealer.	6
*Can closing machine: properly adjusted, chucks, and rolls in good conditionfrequent inspection of can seams; machine operated at normal speed.	6
*Efficient sterilization: proper control of time and temperature of restorting.	4
Cooling of cans: cans cooled properly with cold water immediately after retorting.	4
*Cans inspected: inspected for defects, deadheads, flippers, swells, leaks, as soon as possible	4
Storage of packs: in cool, dry, separate room	3
	100

Source: Fish Inspection Department,
Ottawa, Canada.

Annexure II-H

September 5, 1969

To:

Regional Director of Fisheries-Vancouver
-St. John's
-Halifax
-Quebec

Acting Regional Director of Fishereis-Winnipeg

Re: Inspection Procedure for Canned Shrimp from India

During a recent visit to this office Dr. V.K. Pillai, Fishery Consultant, Indian Institute of Foreign Trade, requested a modification of the current practice of detaining all shipments of Indian canned shrimp pending the results of the sterility tests. He stated that the difficulty which resulted in sterility problems several years ago has now been overcome and also that all canned shrimp destined to Canada is subjected to thorough sterility testing in India.

Our records show that only four shipments totalling about 2,000 cases entered Canada through Vancouver during the last 1½ years. These were tested for sterility and were all approved.

Since detentions pending sterility test are undoubtedly burdensome to the Indian exporter the Department feels that it would be reasonable to make the following modification on a trial basis.

The next four shipments of Indian Canned Shrimp entering through each Region shall be tested for sterility as in the past but the parcel shall not be detained during the test period. The importer will, however, be asked to provide the Department on request, with the details of any shipments which were made from the lot before testing is completed.

If no further evidence of non-sterility is found during these tests future shipments of shrimp will need only be subjected to the usual spot testing for sterility.

Sd/-
C.G. Anderson
Acting Director
Inspection Branch

Annexure II-I

Standard for Shrimp (Prawns) Imported into Japan

Scope

1. This standard shall apply to frozen (*1) shrimps (prawns) with shell and frozen headless shrimps (prawns) with shell imported to Japan.

*1: Term 'frozen' is taken to include such terms as 'deep frozen' and 'quick frozen'

Standard

2. The standard for imported frozen shrimps (prawns) with shell be as follows:

Item	Requirements
Quality requirement	Marked result under the provisions of marking specification shall be above average of 3.0 mark and in no single provision there shall be 1 mark.
Temperature	The temperature shall be below (-10°C) at the internal centre of the product.
Net weight	The net weight of the product shall not be less than the labelled one.
Packaging materials	Packaging materials shall be hygienic and strong enough to protect the product from any of the damages caused by external force.
Labelling	The labelling shall be true and correct to represent the name and nature of the product.

Extraneous substance	There shall be no extraneous substance both surface and inside the product.
Freshness	The product shall not be decomposed. In the case that is impossible to judge the freshness only by sensory assessment, a series of chemical examination are conducted by the method specified in following 1. In this case, volatile basic nitrogen (VBN) content of the sample shall be below 30 mg. per 100 g.
Bacteria plate count	Below 1,000,000 per 1 g. of the sample by the method specified in following 1.
E. Coli M.P.N.	Negative per 100 g. of the sample by the method specified i following 1.
Size	The size of shrimps (prawns) shall conform to the size assortment labelled or contracted.

1. Determinations of volatile basic nitrogen content, bacteria plate count and E. Coli M¾P.N. are made respectively by the following methods.

   (a) Volatile basic nitrogen (VB¾N): Edward convay's micro diffusion method.

   (b) Bacteria plate count: standard plate count (SPC) method at 37°C.

   (c) E. coli M.P.N. : E C test method.

2. Examination of the net weight is made as follows:

   (a) Thawing: A block of the sample is put in a bag made of water-proof material such as polythylene film. The bag is soaked in flowing or still potable water until each of the individual shrimps (prawns) can be easily separated from the block.

(b) Weighing: The bag is emptied on to a steve with mesh appropriate to the size of shrimps (prawns). After draining for about 2 minutes weight the sieve. The temperature of the internal centre of the product just before and after thawing the temperature of the thawing water and the duration of thawing shall be examined.

3. Examination of the size assortment is made as follows:

Weight a unit of 1 lb.(454 g.) of shrimps (prawns) random from the sample and examine:

(a) The conformity of the number of shrimps (prawns) consist of 1 lb. to the contracted number.

(b) The conformity of the weight of each of the individual shrimp (prawns) consists of 1 lb. to the weight specified in table 1.

Table 1

No. of shrimps per lb.	Weight of each shrimps
10 or less	g. 43 or more
11 - 15	29 - 42
16 - 20	22-- 29
21 - 25	18 - 22
26 - 30	15 - 18
31 - 35	13 - 15
36 - 40	11 - 13
41 - 50	9 - 11
51 or more	9 or less

3. Specification for marking

Provisions	Specification for marking	Mark
Appearance	1.The shrimp (prawn), whole, which holds the original form without being split or broken. The shrimp (Prawn), headless which	

Provisions	Specification for marking	Mark
	has the head part ('carapace' in technical term) completely removed, and holds the good form without being split or broken.	
	2. The shrimp (prawn), whole, which holds the fiarly good, form, or being slightly split or broken. According to the degree of the above mentioned defects.	4-3
	3. The shrimp (prawn), headless, which does not hold the good form. or being split or broken. The shrimp (prawn), headless, which leaves a part of the head ("carapace" in technical term, unremoved, does not hold the good form, or being split or broken.	2
	4. The shrimp (prawn), whole, which is deformed conspicucusly, or being split or broken conspicuously. The shrimp (prawn), headless which leaves the greater part of the lead ("carapace" in technical term) unremoved or being deformed, split of broken conpicuously.	1
Colour	1. The shrimp (prawn), which keeps such colour as characteristic of particular species of shrimps (prawns) without any sign of the grayish white caused by a dehyderation or other change of colour.	5
	2. The shrimp (prawn) which keeps the fairly good colours or gives the slight sign of the grayish while caused by dehydration, or other change of colour.	

Provisions	Specification for marking	Mark
	According to the degree of the above mentioned defects.	4-2
	3. The shrimp (prawn) which does not keep the good colour, or gives the sign of the grayish white caused by dehydration or o other change of colour. The shrimp (prawn) which possesses dark colour in the tail part.	2
	4. The shrimp (prawn) which is discoloured conspicuously, or gives conspicuous sign of the grayish white caused by dehydration or other change of colour.	1
Flavour and Odour	1. The shrimp(prawn) which keeps the good originals flavour being free from such odours as of hydrogen sulphide, ammonia trimehylamine or any other else that is not characteristic of particular species of shrimps (prawns)	5
	2. The shrimp (prawns) which keeps the fairly good flavour, or almost being free from such odours as of hydrogen sulphide, ammonia, timethylamine of any other else that is not characteristic of particular species of shrimps (prawns). According to the degree of the above mentioned defects.	4-3
	3. The shrimp (prawns) which does not keep the good flavour, or gives such odours as of hydrogen sulphide, ammonia, trimethylamine or any other else that is not characteristic of particular species of shrimps (prawns)	2

Provision	Specification for marking	Mark
	4. The shrimp (prawn) which keeps hardly any flavour, or gives conspicuously such odours as of hydrogen sulphide, ammonia trimethylamine or any other else that is not characteristic of particular species of shrimps (prawns)	1
Tissue or Texture	1. The shrimp(prawns) which is reasonably tight and elastic in its tissue without any sign of the sponge-like or other abnormal tissue that is not characteristic or particular species of shrimps (prawns)	5
	2. According to the degree of the above mentioned defects.	4-3
	3. The shrimp (prawns) which lacks the reasonable or fair tightness and elasticity in its tissue, or gives sign of the spoge-like or other abnormal tissue that is not characteristic of particular species of shrimps (prawns)	2
	4. The shrimp (prawns) which is too soft in its tissue, or gives conspicuous sign of the sponge-like or other abnormal tissue that is not characteristic of particular species of shrimps (prawns)	1
Uniformity	1. The block of shrimp (prawns) which does not mix any different species or 'softs hell' caused by exuviation.	5
	2. The block of shrimp (prawns) which mixes hardly any different species or "softshell" caused by exuviation. According to the mixed degree of the different species of "softshell"	4-3

Provision		Specification for Marking	Mark
	3.	The block of shrimp (prawns) which mixes different species or "softshell" caused by exuviation.	
	4.	The block of shrimp (prawns) which mixes different species "softshells" caused by exuviation conspicuously.	1
Undesirable substances	1.	The block of shrimp (prawns)which is free from the splintered shell, spines legs, or any other undesundesirable substances separated from the body of the shrimps (prawns)	5
	2.	The block of shrimp (prawns) which is fairly free from the splintered shell, spines, legs, or any other undesirable substances sprated from the body of the shrimp (prawns) According to the mixed degree of the above mentioned undesirable substances.	4-3
	3.	The block of shrimp (prawns) which contains the splintered shell, spineslegs or any other undesirable substances separated from the body of the shrimps (prawns)	2
	4.	The block of shrimp (prawns) which contains the splintered shell, spines, legs, or any other undesirable substances separated from the body of the shrimps (prawns), conspicuously.	1
Glaze (In case that such packaging as will insure against dehydration are used, the glaze will not be necessary).	1.	The glaze is clean, and thick and even enough to prevent dehydration.	

Provision	Specification for Marking	Mark
	2. The glaze is clean, and fairly thick and even. According to the degree of the above mentioned glazed conditions.	4-3
	3. The glaze is clean, but there is an are without glaze on the surface of the block.	
	4. The glaze is not clean, or there is hardly any area glazed on the surface of the block.	1

Sampling and Inspection

4. The inspection is conducted under the provision of marking specification, basing upon the samples which are drawn at random at the under-specified sampling rates in proportion of the sizes of lots which undergo the inspection.

   Any single unit of the sample (*2) shall be regarded to defective if the unit does not meet the quality requirement specified in the standard (2) and any lot shall be classified as "passed" if defective unit count does not exceed the count specified in the column A (passed) if the following score tables and there is no major defect (e.g. the temperature, the labelling, the extraneous substance and the freshness) in the sample.

*2. A single unit of the sample is taken to the minimum package in the sample.

Table 2

Score Table for Judgement

(in case the weight of a
unit is more than 1 kg.)

Size of lot	Count of samples.	Count of defective unit for judgement	
		A (passed)	B(defective)
1-10	All	0	1
11-100	10	1	2
101-500	15	1	2
501-1,000	25	2	3
1,001-5,000	35	3	4
More than 5,001	50	4	5
35-1,000	35	3	4
1,001-5,000	50	4	5
5,001-10,000	75	6	7
10,001-20,000	110	8	9
20,001-50,000	150	10	11
More than 50,001	225	14	15

Source: Marine Products Importers'
Association, Tokyo, Japan.

Annexure II-J

Basis for Continuous In-plant Inspection System

(1) Only licenced fishing boats including country crafts shall be permitted to supply raw materials to pre-processing units (peeling sheds) and processing plants.

(2) All fishing boats shall carry ice. The catch shall be immediately washed, iced and stored properly.

(3) The boats shall follow a strict cleaning schedule so that surface bacterial load is limited to the required level.

(4) All vehicles engaged in transport of raw material shall be either insulated or refrigerated and shall be kept clean and deodourised by suitable treatment with detergents and disinfectants.

(5) No peeling sheds which do not satisfy minimum requirements shall be permitted to supply/handle raw materials.

(6) Peeling sheds should follow a standard pattern of construction with plentiful supply of good water and access to good quality ice and facilities for disposal of wastes and shall be maintained in a sound hygienic conditi condition.

(7) Ice factories supplying ice shall use only potable water, for the manufacture of ice where tube well or well or well water is used, it should be tested for freedom from iron, copper and contaminating agents and from bacteria.

(8) In the factory the incoming raw material shall be tested by a competent inspection authority. No material not certified by

the authority, shall be processed by a processing factory.

(9) The material shall also be examined at various stages of processing by the authority, who shall have powers to remove whole or part of the material from the production line, if according to him the material does not satisfy specifications.

(10) The processing plants shall have sufficient space to carry out all operations necessary for the product it produces.

(11) The plants shall have all the equipment and machinery to conduct the operations on sound lines.

(12) Freezing units shall be capable of quick freezing the material in less than 3 hours (where plate freezer is used) and less than 5 hours (where blast freezer is used).

(13) These shall have sufficient fresh fish and frozen fish storage maintained continuously at temperatures not higher than 1°C and -18°C respectively.

(14) In canning factories all heating operations shall be done by steam and seaming by mechanical double seamers.

(15) In all processing plants, the surfaces of tables, tanks, utensils and vessels with which the raw material comes into contact shall be made of metal or of other smooth-non-porous and easily cleanable materials provided that the materials are not lead or other toxic materials.

(16) The water used in the plants shall be continuously chlorinated and shall conform to specifications laid down for potable waters.

(17) Plentiful supply of ice manufactured from good quality water should be available in the plants.

(18) The units/plants shall have good drainage facilities and arrangements for disposal of wastes.

(19) The plants shall adopt a regular cleaning schedule using detergents and sanitary agents approved by the Inspection authority.

(20) Sufficient toilet facilities shall be made available.

(21) The Inspection Officers assigned to be plants shall have access to all parts of the plants/units or sub-units at all times.

(22) Each plant shall have a laboratory manned by a qualified person.

(23) All materials packed shall be sealed after final testing and drawal of samples for bacterial tests by the Inspection Officer on the same day.

Necessary rules will have to be framed for operation of the scheme on the lines mentioned above. When fully implemented, the scheme is estimated to cost about Rs one million by way of recurring expenditure. It may also necessitate full fledged control laboratories under the inspection organisation in all important centres of production and export with a central control laboratory. Details of a possible grading system for Processing Units and Sub-units are furnished.

(ref: grading followed by Dept. of Fish Inspection, Canada)

Source: Central Institute of Fisheries
Technology, Ernakulam.

Annexure III-A

Import Policy for Registered Exporters of Fish and Fish Products

Import Policy for Registered Exporters for the year 1969-70 has been announced in the import Trade Control Policy Book (Vol. II) released on the 1st April, 1969, by the Chief Control of Imports and Exports, New Delhi. Following are the items now allowed to be imported against export of fish and fish products:

Sr. No.	Export Product	Import Replenishment percentage	Materials permitted for import	Remarks
	F. Fish & Fish Products			
F.1	Edible fish & fish products and preparations (including froglegs, lobstertails, sharkfins, fishmaws, prawn powder fish pickles and other edible fish extractions) namely the following:-			
F.1 1	Dried Fish	10%	(a) Fishing Hooks (50%) see Remarks 1)	(1) Licence for fishing hooks may be issued only to a person

Contd..

Sr. No.	Export Product	Import Replenishment percentage	Materials permitted for import	Remarks
				(exporter or his nominee) certified by the Director of Fisheries/ Industries to be an actual catcher of fish
			(b) Spare parts of Marine Diesel Engines above 40 H.P. (Permissible categories (see remark 2)	(2) Licence for spare parts of marine diesel engines may, be issued only to a person (exporter or nomin nominee) certified by the Director of Fisheries to be an owner of fishing boat and upto the extent recommended by him.
F.1.2.	All others	10%	(a) Fishing hooks (50%)	(1) Licence for fishing hooks may be issued to a person (exporter or nominee) certified by the Director of Fisheries/Industries to be actual catcher of fish.
			(b) Citric acid (2%)	

Contd..

Sr. No.	Export Product	Import Replenishment percentage	Materials permitted for import	Remarks
			(c) Waxed cartons printed printed or not; Master cartons, printed or not; Card-board, corrugated board, cartons and sleeves-printed or not. Vegetable parchment paper (25%)	
			(d) Tinplate, Prime, OTS quality	(2) Tinplate will be allowed only in favour of a fabricator of tin-plate containers.
			(e) Refrigerants (dichloro Difluoro Methane (in return-able non-returnable containers) (10%)	
			(f) Stainless steel sheets (thicker than 18G) and plates for fabrication of processing equipment (25%) (see remark 3)	(3) Licence for stainless steel sheets/plates may be issued subject to actual user condition in the name of the registered exporter,

Contd..

Sr. No.	Export Product	Import Replenishment percentage	Materials permitted for import	Remarks
				only if he is a manufacturer of canned or frozen fish. No nomination is permissible.
F.1.2			(g) Spare parts of marine diesel engines above 40 H.P. (permissible categories) (see remark 4)	(4) Licence may be issued for spare parts of marine diesel engines only to a person (exporter or nominee) certified by the Director of Fisheries to be a owner of fishing boats, and upto the extent recommended by him.
			(h) Spare parts for refrigeration machinery. (see remark 5)	(5) Licence may be issued for spare parts for refrigeration machinery only to the extent recommended by the Director of Fisheries/Industries.
			(i) Spare parts of canning machinery (see remark6)	(6) Licence may be issued for spare parts of canning machinery, only to the extent recommended by the Director of Fisheries/Industries. No nomination

Contd..

Sr. No.	Export Product	Import Replenishment percentage	Materials permitted for import	Remarks
				isis is ordinarily permissible however, if a registered exporter of canned fish products does not have his own canning facilities but utilised outside canning facilities on a job contract basis, there is no objection to the registered exporter nominating such canning unit to receive import licence for spare parts of canning machinery.
			(j) Polythylene moulding powder/ granules (5%) (against export of frozen fish and froglegs only) (See remark 7)	(7) No import licence will be issued for polythylene, but supply may be allowed at international prices from indigenous producers in accordance with the Scheme announced by the Ministry of Foreign Trade & Supply.
				(8) Nomination may be made in favour of a manufacturer of (i) refrigerants in the case of frozen fish, and (ii) OTS cans in the case of canned fish.

Contd..

Note: The percentage shown under column Materials permitted for import indicates the extent of the face value of the licences that can be utilised for import of that item.

The important changes noticed are:

1. Import of spare parts of Marine Diesel Engines, refrigeration machinery and canning machinery is restricted "to the extent recommended by the Director of Fisheries".

2. Import of refrigerants is restricted to 10 per cent of the face value of the licence.

3. Indigenous allotment of polythylene at international price is reduced from 25 to 5 per cent of the face value of the licence.

4. Waxed cartons, master cartons, cardboard, corrugated board, cartons and sleeves not printed can be imported but printed labels cannot be imported.

5. The provision for import of Stainless steel sheets has been increased from 5 to 25 per cent of the face value of the licence.

6. The provision for utilisation of the R.E.P. licence on the strength of the actual user licence is now restricted to twice the value of the actual user licence subject to the further restriction that items shown as "AU on restricted basis" will be allowed up to 10 per cent of the face value of the replenishment as "AU for export production only" will be allowed within a maximum of Rs 10,000/-.

Annexure XI-B

Shipping Facilities Available for Exports of Indian Marine Products

Shipping Lines/ Conference/Rate Agreement	Base Port	Frequency of Sailing and availability of Reefer Space	Freight Rates
Malabar Coast/UK & EIRE/Continental Conference	Cochin	On an average there sailings per month to London and Liverpool and four sailings per month to continental ports like Antwerp, Rotterdam, Hamburg and Bremehvan. One sailing each on monthly basis to Marseilles, Le Havre and Dunkirk. Reefer space provided on the basis of inducement.	Refrigerated or cool chamber cargo N.O.E. Not exceeding 35°F US $ 47.90 per cm. Exceeding 35°F US $36.80 per cm. - plus 15% Middle East surcharge and 10% deferred commission or 9½% immediate rebate.
American President Lines Limited	Cochin	2 to 3 sailings monthly to USA, Atlantic and Pacific ports of Los Angeles and San Fransisco. All vessels provided with reefer space.	Frozen shrimp and Lobster-tails US $ 111.50 per 1,000 kg. or US $ 100 per cm. Froglegs US $ 122.75 per 1,000 kg. or US $ 110 per cm.

Contd..

Shipping Lines/ Conference/Rate Agreement	Base Port	Frequency of Sailing and availability of Reefer Space	Freight Rates
Malabar-Far East Trade Agreement	Malabar ports	Mitsui-Osaka line provides one sailing per month, sometimes 2 per month, depending on inducement. Vessels called directly at Singapore and cargo for other ports accepted with transhipment. However, none of its vessels is equipped with reefer space in this trade.	Malabar ports/Straits Reefer cargo US $46.50 per 1,000 kg. or cu.m. Canned fish N.O.E. US $ 25.10 per M3 Dried fish in Bundles/bags US $ 32.35 per 1,000 kg. Dried fish in cases US $21,95 per cu. m.
		The Shipping Corporation of India provides 12-15 sailings per month and the ports of call normally are Swettenham, Penang, Singapore, Bangkok Vessels do not call at Tuticorin at present and the calls at Saurashtra ports are subjected to inducement only. Two vessels out of 4 employed on this route have reefer containers with a loadable capacity of about 1,500 cu. feet each	Malabar ports/Hong Kong Refrigerated cargo US US$ 57.20 per 1,000 kg. or cu. m. Dried fish in Bundles/bags US $29.35 per 1,000 kg. Malabar ports/Japan Refrigerated cargo US $ 80.05 per 1,000 kg or cu. m. Dried fish in bundles/bags US $40.35 per 1,000 kg. or cu. m.

Contd..

Shipping Lines/ Conference/Rate Agreement	Base Port	Frequency of Sailing and availability of Reefer Space	Freight Rates
		Yamashita, Shinninhom Line have no regular sailings to the ports covered under this rate agreement	Malabar ports/Djakarta Refrigerated cargo US $70.00 per 1,000 kg. or cu. m. Dried fish in bundles/bags US $41.00 per 1,000 kg. Malabar ports/Abu, Lloido and Manila Refrigerated cargo US $83.95 per 1,000 kg. or cu. m. Canned fish N.O.E. US $44.50 per 1,000 kg. or cu.m. Dried shrimps in cases US $31.60 per cu. m. Malabar ports/Bangkok and Malabar ports to Saigon Refrigerated cargo US $70.00 per 1,000 kg. or cu.m.

Contd..

Shipping Lines/ Conference/Rate Agreement	Base Port	Frequency of Sailing and availability of Reefer Space	Freight Rates
Japan/Persian Gulf/Japan	Bombay/ Saurashtra/ Tuticorin/ Madras	On an average 6 to 8 sailings per month from Bombay, out of which about 4 wailings can provide reefer space, and 3 to 4 sailings from other ports depending on inducement. Ports of call in Japan - Moji, Cube, Ossaka, Nagoya and Yukohama.	No specific tariff rates and they are accepted as refrigerated cargo N.O.E. rates. US $79.45 per cu.m. or 1000 kg. For Mangalore and Tuticorin shipments additional charge of US $1.40. For shipments of Cuddalore and Pondicherry additional charge of US $1.05. From Malabar ports to Japan US $80.05 per 1000 kg. or cu.m.
Gulf-Arabian sea/ Orient Trade Agreement	Bombay	(Information not readily available)	Bombay/Straits Refrigerated cargo US $46.50 per 100 kg. or US $41.50 per cu.m. Dry Fish in bundles/bags US $32.35 per 1000 kg. Dried fish in cases US $21.35 per cu.m.

Contd..

Shipping Lines/ Conference/Rate Agreement	Base Port	Frequency of Sailing and availability of Reefer Space	Freight Rates
			Bombay/Djakarta (Direct) Refrigerated cargo US $74.80 per 1000 kg or cu.m. Dried fish in bundles/ bags. US $37.35 per 1000 kg. Bombay/Bangkok (Direct) Refrigerated cargo US $68.00 per 1000 kg. or cu.m. Bombay/Manila Refrigerated cargo US $72.85 per 1,000 kg. or cu.m.
West Coast of India & Pakistan/ USA Conference	Bombay	(Information not readily available)	Frozen froglegs *US $110.00 per cu.m. (Contract) or* US $122.75 per 1,000 kg. (Contract) or US $129.25 per cu.m. (Non-Contract) or US $144.24 per 1,000 kg. (Non-Contract) * From 1st December, 1969.

Contd..

Shipping Lines/Conference/Rate Agreement	Base Port	Frequency of Sailing and availability of Reefer Space	Freight Rates
			US $105.00 per cu.m. or (Contract) US $ 117.00 per 1,000 kg. (Contract) Fish - Prawns or Shrimp dried or canned in cases or cartons (ordinary storage). US $56.75 per cu.m. (Contract) or US $66.75 per cu.m. (Non-Contract) Fish and shellfish NOS in packages under referigeration US $100.00 per cu.m. (Contract) or US $111.50 per 1,000 kg (Contract) or US $117.60 per cu.m. (Non-contract) or US $131.00 per 1,000 kg. (Non-contract) Plus 15% suez surcharge. Unless otherwise stated these rates are subject to an increase of 5% rounded off the nearest multiple of 25 cents will effect from 1st December, 1969.

Contd.

Shipping Lines/ Conference/Rate Agreement	Base Port	Frequency of Sailing and availability of Reefer Space	Freight Rates
India-Pakistan/ UK - Continental Conference (West Coast) (Karmahom)	Bombay	6 to 8 sailings per month, out of which 2 sailings are with reefer space; for ports in UK, Northern Ireland and Eire. For continent and other countries - ports in Gibraltar, Greece, Yugoslavia, Italy, France Spain, Portugal, Belgium Scotland, Germany, Denmark, Norway, Sweden and Finland.	Refrigerated or cool chamber cargo, N.O.E. Not exceeding 35°F US $ 47.90 per cu.m.(Gross) Exceeding 35°F US $36.80 per cu.m.(gross) - plus 15% suez canal surcharge
Bombay-Australia Rate Agreement	Bombay	On an average 1 to 2 sailings from West coast of India to Australian ports - Fremantle, Adelaide, Melbourne, Sydn Sydney, Brisbane. Other others ports with transhipment.	R Refrigerated cargo - US $60.30 per cu.m. Minimum per B/L US $30.35
Bay of Bengal/ Japan/Bay of Bengal conference	Calcutta	Regular monthly sailings to conference destinations. Penang, Port Swettenham, Singapore, Bangkok, Hong Kong, and main ports in Japan.	Refrigerated prawns and fish for Penang, Port Swettenham and Singapore US $54-45 per 1,000 kg. or US $38.20 per M3

Contd..

Shipping Lines/ Conference/Rate Agreement	Base Port	Frequency of Sailing and availability of Reefer Space	Freight Rates
			For Bangkok US $76.45 per 1,000 kg. or US $53.55 per M3 For Hong Kong US $73.10 per 1,000 kg. or US $51.20 per M3 For main ports in Japan US $87.00 per 1,000 kg. or US $60.80 per M3
Everett Steamship Corporation	Calcutta	Monthly sailings with reefer space to Los Angeles, San Fransisco, Port Land, Oakland, Seattle, Vancuver, B.C.	Frozen cargo US $111.50 per 1,000 kg. or US $100.00 per M3
Nedlloyd Hoegh Lines	Calcutta	Monthly sailings from Calcutta - 6 vessels employed and 5 have reefer space. Services to Los Angles, San Fransisco, Alameda, Oakland, Tacoma, Vancuver.	Frozen shrimps US $124.00 per 1,000 kg. or US $111.00 per cu.m.

Contd..

Shipping Lines/ Conference/Rate Agreement	Base Port	Frequency of Sailing and availability of Reefer Space	Freight Rates
Calcutta Continental Conference	Calcutta	No fixed number of sailings per month but provided according to requirements	Refrigerated or cool chamber cargo N.O.E. for UK and continental ports Not exceeding 35°F US $ 47.90 per 1,000 kg. Exceeding 35°F US $36.80 per 1,000 kg. plus Middle East surcharge of 15%
Calcutta, East Coast of India and Pakistan/ USA Conference	Calcutta	Regular monthly sailings from the conference loading range in India to conference destinations in the USA. Calcutta to US Atlantic and Gulf of Mexico ports.	Marine products in refrigeration: Shrimps and froglegs US $ 105 per M3 or US $ 117 per 1,000 kg (Contract) Refrigerated or cool chamber cargo N.O.E. Not exceeding 35°F US $47.90 per cu. m. Exceeding 35°F US $36.80 per cu. m. - plus Middle East surcharge 15%

Annexure IV-A

Collaboration by Chartering of Six Shrimp Trawlers (75' long) in an Economic Unit*

Charter charge of one 75' shrimp trawler: $ 30,000 per year

(a) Amortisation period: 8 years - cost $ 85,000

(b) Boat over and above depreciation
will net $ 15,000 per boat/year
to $ 20,000

$105,000 perboat

(c) Depreciation $ 10,000
$ 20,000
$ 30,000/year

For two years	$ 60,000
Option of purchase - $ 85,000 - % on 60,000 normally 50% $ 85,000 - 30,000 = 55,000	$ 55,000
	$115,000
Charter charge for two years	$ 60,000
Cost of vessel	$ 60,000
Cost of new shrimp trawler	$ 97,000
Cost of gear	$ 6,000

Cost of operations $ 256,000

(i)

(a)	Fuel	18% (30%)
(b)	Crew	28%
(c)	Ice	10%
(d)	Repairs	10%
(e)	Gear	12%
(f)	Insurance	12½%
(g)	Others	5%

(ii) Depreciation

(iii) Rate of interest on Capital

Receipts - (a) 4,000 boxes/per boat/ per year

(b) 400,000 lbs 200 tonnes

(at ₨ 5,000/tonne $ 666/- a tonne

(c) Foreign exchange earnings $ 200,000

(d) Foreign exchange earnings for six units $ 1200,000

(e) Profit at 11.7 cents/ a lb. for 400,000 lb/ vessel $ 46,000

---

* Source: IIFT Survey Team.

Annexure IV-3

List of Japanese and Other Enterprises for Fisheries Under Capital Co-operation

Country	Investing Japanese Company	Other Parties	Established in	Enterprises on the spot	Capital Converted to 1000 yen	Japanese Share (1000 yen)	%	Kind of Business
Brasil	Taiyo Gyogyo Co.	Y. Uchiyama & Others	Sept., 1959	Taiyo Industria de Pesca S/A	59,593	58,878	98.8	Cold Storage
Brasil	Taiyo Gyogyo Co.	N. Miyake & others	May, '59	Sociedate de Pesca Taiyo Ltd.	57,980	1,160	2.0	Trawling
Brasil	Nihon Reizo Co.	100% invested by Japan's side	Jul., '60	Industria Brazileira de Pescados a Frios S/A	202,050	202,050	100.0	Cold Storage, Cannery
Brasil	Nihon Reizo Co.	Companhia de Pesca Norte do Brazil	Jul., '60	Companhia de Pesca Norte do Brasil	331,110	156,000	40.0	Pole and line, Whaling
the Argentine	Nihon Suisan Co. Nitto Suisan Co.	100% by Japan	Aug., '57	Aurora Austral S.A.I.C.	92,520	92,520	100.0	Tuna Fisheries
the Argentine	Taiyo Gyogyo Co.	100% by Japan	Jan., '55	Taiyo Argentina S.A.	304,186	304,186	100.0	Bull Trawling
Bahama (Br)	Taiyo Gyogyo Co.	O.D.C. (Italia) Sp. A	Aug., '59	Atlantic Fishing Co.Ltd	36,000	18,000	50.0	Trawling
Guatemala	Nichiro Gyogyo Co. Mitsubishi Shoji Co.	Pesca Co-pesca	Sept., '61	Pescal, Co-pesca	216,000	105,840	49.0	Shrimp Trawling
Antilles (D)	Nihon Reizo Co.	100% by Japan	May, '63	Curacao Pioneering N.V.	102,383	102,383	100.0	Cold Storage
Antilles (D)	Seiju Gyogyo Co.	100% by Japan	Aug., '67	Curacao Seiju Co., N.V.	54,000	54,000	100.0	Bottom Long line
Peru	Mitsui Bussan Co.	Tulio Fertinger Felix Denegri	Oct., '63	Industrias Martimas de Supe S.A.	107,280	107,280	100.0	Meal Manufacturing
India	Taiyo Gyogyo Co.	Fishery Agency & others	Apr., '56	New India Fisheries Ltd.	96,000	47,040	49.0	Cold Storage Shrimp Trawling
Ceylon	Nisso Gyogyo Co.	Ocean Food & Produc., Ltd.	Nov., '55	Ocean Food & Produc Ltd.	155,521	28,182	18.0	Cold Storage
Malaysia	Kaigai Gyogyo Co.	Fed. of East Coast Fish Products Marketing Coop.	Aug., '59	Malayan Marine Industries	58,800	28,812	49.0	Tuna Fisheries Cold Storage,Cannery

Contd..

Country	Investing Japanese Company	Other Parties	Established in	Enterprises on the spot	Capital Converted to 1000 yen	Japanese Share (1000 yen)	Japanese Share %	Kind of Business
Malaysia	Kita-Borneo Suisan Co.	Kwan Kun Ming	May, '64	North Borneo Fishing Co., Ltd.	69,930	33,500	48.0	Shrimp Trawling
Sarawak, Malaysia	Toyo Shrimp Co.	Ong. Kee Hui	Aug., '65	Tropical Seafoods Ltd.	65,957	56,957	85.0	Cold Storage Shrimp Trawling
Ryukyu	Taiyo Gyogyo Co.	K. Kuniba & 79 other persons	Mar., '61	Ryukyu Gyogyo Co.	187,200	93,600	50.0	Trawling Tuna Fisheries, Cold Storage
New Hebrides (Br. Fr.)	Taiheiyo Suisan Co., Mitsui Bussan Co., Ito-Chu Shoji Co.,	D.J. Gubby & Co.	Nov., '67	South Pacific Fishing Co. (N.H.) Pty.	120,000	75,000	62.5	Cold Storage
Fiji	Nichiryo Co. Banno Tsusho Co.	23 small holders	Aug., '64	Pacific Fishing Co., Ltd.	272,400	245,829	90.0	Cold Storage
Hong Kong (Br.)	Nihon Suisan Co.	Daigyo Construction Co.	Mar., '55	Tayoh Construction Co.	188,212	6,273	3.3	Cold Storage
Thailand	Kyokuyo Hogei Co. Nomura Boeki Co.	Thai Trading Co. Ltd.	Jul., '66	The Thai Marine Food Co., Ltd.	12,750	8,500	66.6	Cold Storage
Burma	Taiyo Gyogyo Co.	Burma Fisheries Ltd.	Jun., '54	Economic Development Fishery Corp.	45,000	15,300	34.0	Bull Trawling
Venezuela	Chiba Pref. Gyogyo Shinko Co.	Flota Drodesquera Altamar C.A.	Jul., '59	Flota Drodesquera Altamar C.A.	49,520	1,479	3.0	Tuna Fisheries
Papua New Guinea	Nihon Kinkai Hogei Co.	Comex Trading Pty.	Jun., '67	South Sea Fishing Co.	40,000	19,600	49.0	Shrimp Trawling
New Zealand	Taiyo Gyogyp	E.B.P. Taylor, A.B.D. Dennie J.S. Fallot & others	Nov., '67	Taimoana Fisheries Ltd.	50,000	12,250	24.5	Trawling
Madagascar	Taiyo Gyogyo Co. Kawakami Boeki Co.	Rep. of Madagascar Codal Co. & others	Dec., '66	Societe Malgache de Pecherie	120,000	58,500	48.75	Shrimp Trawling
Las Palmas	Nisso Suisan Co. Marubeni-Iida Co.	Ramon Roque Gonyaley & 3 others	Feb., '66	Frigorificos Hispano Suisos S.A.	156,000	23,400	15.0	Cold Storage
Tanzania	Higashi Africa Gyogyo Kaihatsu Co., Kaigai Gyogyo Co.	Mon Ocean Product Co.	Feb., '66	New Mwonaob Ocean Products Ltd.	50,400	25,200	50.0	Shrimp Trawling Stick-held dip net

Contd..

Country	Investing Japanese Company	Other Parties	Established in	Enterprises on the spot	Capital Converted to 1000 yen	Japanese Share		Kind of Business
						(1000 yen)	%	
Mauritius	Kaigai Gyogyo Co.	Blyth Bros. & Co.	Feb., '67	Limuria Fishing Enterprises Ltd.	17,250	6,210	36.0	Bottom fish Pole and line
Ivory Coast	Taiyo Gyogyo Co.	Overseas Discount Corp.	May, '62	Societe Ivorienne des Pecheries (S.O.I.P.)	115,200	57,600	50.0	Tuna Fisheries
U.S.A.	Taiyo Gyogyo Co.	Peterpan Seafood Inc.	May, '55	Pacific Alaska Fisheries Inc.	72,000	35,280	49.0	Cannery
U.S.A.	Nichiro Gyogyo Co. Mitubishi Shoji Co.	New England Fish Co.	Apr., '66	Orca Pacific Packing Co.	360,000	180,000	50.0	Cannery
Canada	Taiyo Gyogyo Co.	Br. Columbia Packers Ltd.	Apr., '62	Western Canada Whaling Co. Ltd.	372,960	186,480	50.0	Whaling
Canada	Taiyo Gyogyo Co.	Fishery Products Ltd.	Jun., '67	Atlantic Whaling Co.Ltd.	33,300	16,650	49.5	Whaling
Alaska, U.S.	Nichiro Gyogyo Co.	100% by Japan	Oct., '67	Nichiro Pacific Ltd.	54,000	54,000	100.0	Sale of Canned fish Salmon roe Processing & Marketing
Portugal	Mitsui Bussan Co.	Comundo Lda.	May, '63	Uniao Luso de Japonesa Algas Morinhas Sarl	375,652	187,826	50.0	Processing of Agaragar
Italy	Hoko Suisan Co.	Antonio Pelgouta	Sept., '64	Tuna Societa per la Pesca Oceanica S.P.A.	203,490	29,070	14.3	Tuna Fisheries
Israel	Goyo Suisan Co.	Somerfin (Israel) Ltd.	Nov., '58	Somerfin (Israel) Ltd.	72,000	36,000	50.0	Tuna Fisheries

Source: Fisheries of Japan, 1969
Fisheries Agency

Annexure IV-C

Fisheries Joint Ventures, by Region

as of October 1, 1967

Description	Latin America	Asia, Oceania	Africa	Europe, Near & Middle East, North America	Total
Countries of the Other Party	Brazil Argentine Bahama Is. (B), Guatemala, Antilles (D), Peru, Venezuela	India, Ceylon, Malaysia, Ryukyu, New Hebrides, Fiji, Australia, New Zealand, Thai, Burma, Hong Kong	Ivory Coast, Madagascar, Spanish Canary Is. Tanzania, Mauritius	Portugal Canada Italy U.S.A. Israel	
Number of Corporations, established on the spots	Million yen 12	Million yen 13	Million yen 5	Million 8	38
Authorized Capital of the Corporation (Regional Total)	Million yen 1,613	Million yen 1,362	Million yen 456	Million yen 1,478	Million yen 4,909
Total investment by Japan's side	1,204	670	171	693	2,738

Contd.

Description	Latin America	Asia, Oceania	Africa	Europe, Near & Middle East, North America	Total
Number of Fishing Vessels by major fish, planned to catch	48	51	17	9	125
Bottom fishes	31	38	10	-	79
Tuna	3	12	4	3	22
Whale	1	-	-	6	7
Others	13	1	3	-	17
Catch (ton)					
Shrimps	1,080	1,868	309	-	3,257
Other bottom fishes	9,547	4,359	21	-	13,927
Tuna	1,579	3,770	-	-	5,349
Others	29,611	-	100	-	29,711
Fish Total	41,817	9,997	430	-	52,244
Whale (number)	448	-	-	713	1,161

Source: Fisheries of Japan, 1969. (Original Source: The 2nd Ocean Fisheries Division, Fisheries Agency.

Annexure IV-D

Overseas Investment in Fisheries by Japan

Year	Latin America	Asia, Oceania	Africa	Europe, North America
1953		Burma Taiyo Co.		
1954	Argentine Nitto Suisan, Hokko Gygyo			
1955	Argentine Taiyo Co.	Hong Kong Nippon Suisan Co. Ceylon J.C. Trading Co.		
1956		India Taiyo Co.		
1957		New Hebrides Taiheiyo Suisan Co. Mitsui Bussan Co.		
1958				Israel Goyo Suisan Co.

Contd..

Year	Latin America	Asia, Oceania	Africa	Europe, North America
1959	Brazil Taiyo Co. Bahama Taiyo Co. Venezuela Chiba Pref. Fish.	Malaysia Overseas Fisheries Co.		
1960	Brazil Nihon Refreg.Co. Nihon Refreg Co.	North Borneo Taiyo Co.		
1961	Guatemala Nichiro Gyogo Mitsubishi Trading	Ryukyu Taiyo Co.		
1962			Ivory Coast Taiyo Co.	Canada Taiyo Co.
1963	Antilles Nihon Refreg.Co. Peru Mitsui Bussan Co.	New Caledonia Taiyo Co.	Madagascar Kawakami Trading Co. Eastern Pacific Fish Co.	Portugal Japan Seaweed Co. Mitsui Bussan Co.

Contd..

Year	Latin America	Asia, Oceania	Africa	Europe,North America
1964		Sarawak North Borneo Fisheries Co. Fiji C. Itoh, Nichiryo,Banno		Italy Hoko Suisan Co.
1965				USA Taiyo Co.
1966		Thai Kyokuyo Hogei Co. Nomura Trading Malaysia Oriental Shrimp Co.	Las Palmas Nihon Suisan Co. Hoko Suisan Co. Marabeni Trading Co. Tanzania Eastern African Fisheries Devlp.Co.	USA Nichiro Gyogyo Co. Mitsubishi Trading
1967	Antilles Seiju Gyogyo Co.	Australia Nihon Kinkai Hogei Co. New Zealand Taiyo Co.	Mauritius Overseas Fisheries Co.	Canada Taiyo Co. USA Nichiro Gyogyo Co.

Source:1)Fisheries of Japan, 1969
2)The 2nd Ocean Fisheries Division, Fisheries•Agency.

Annexure IV-E

Joint Venture Corporations on the Spot by type of fisheries

(as of October 1, 1967)

Fishery	Number	Authorised Capital (million yen)	Catch (Tonnes)
Trawl Fisheries	12	696	17,184
Shrimp trawl	7	696	3,257
Others	5		13,927
Tuna Fisheries	7	307	5,349
Whaling	2	203	1,161 (No)
Other Fisheries (Fish meal) (Pole and line)	3	216	29,711
Refrigerator	9	351	--
Others (canning, agaragar, salmon roe)	5	565	--
Total	38	2,738	52,244 1,161 (No)

Source: Fisheries of Japan, 1969.

Annexure IV-F

Present Status of Shrimp Trawling in South America

Company	Number of Fishing Vessels Engaged	Base	
Shinyo Gyogyo Company	15	Paramaribo	Surinam
Yutaka Gyogyo Company	10	Georgetown.	Guiana
Nichiro Gyogyo Company	5	"	"
South America Shrimp Fishery Company	5	"	"
Hakodata Kokai Gyogyo Company	5	"	"
Kagawa Godo Gyogyo Company	5	"	"
Hokoku Suisan Company	5	"	"
Nichiro Gyogyo Company (Mother-ship type)	22	Port of Spain, Br. Trinidad	

Source: Fisheries of Japan 1969.

INDEX

Volume-III

Agricultural Refinance Corporation, 31,45,47,392,393, 423,424-425,426,427,428,431, 433,434,435,436,437,438,501

Asian Development Bank, 458, 470,497,498

Australia

- Joint venture, 513-514

Bangkok

- Fish marketing organisation, 402-408

Boats

- Construction, 47
- Cost, 30,32
- Maharashtra, 30
- Gujarat, 30
- Kerala, 30,104
- Tamil Nadu, 30
- Subsidy, 32,47
- Cost of operation, 79-80, 104,105
- Economics of operation, 102
- Imports, 23,26
- Ceylon, 471

Bombay duck

- Exports, 268,323,358
- Gujarat, 390
- Marketing, 390
- Processing, 195,268,269

Brands, 299,302,304

Brazil

- Investment, 507
- Per capita consumption, 507
- Joint venture, 507-509

Building yards, boat, 523-533

Canada, 480-483,497

Canned products

- Non-availability of cans, 259
- Cost of cans, 260-262
- Labels, 264

Cans

- Non-availability, 259
- Cost, 260-262,340-341,345
- Norway, 260
- Aluminium can, 260
- India, 261
- Portugal, 261
- Import, 262
- Tinplate, 263,342
- OTS cans, 263
- Cardboard, 263
- Corrugated paper board, 263
- Size, 340-341
- Drawback, 384
- Sardines, 341
- A1 tall cans, 341
- Price, 342

Canning

- Shrimp, 129
- Kerala, 131
- Mysore, 131
- Maharashtra, 131
- Goa, 131
- Distribution,locational, 132
- Investment, 134
- Capacity utilisation, 135-136
- India, 302
- Prawns, 175-179
- Sardines, 180-183,283,341
- Mackerel, 183-184
- Tuna, 185-186
- Pomfret, 186-187

Central Institute of Fisheries Technology, 19,28,56,77,158, 169,170,171,201,251,258,270, 280,610-615

Consumption, domestic
  Dried fishery products, 373-376
  Shrimps, 379-380

Cost of production
  Canned prawns, 179
  Mackerel, 184
  Sardines, 181-182

Deep sea fishing, 468,472, 474,501,503,521

Deferred payment, 448,449,491

Design
  Peeling sheds, 157,610-615
  CIFT, 158
  Fishing vessel, 21,482
  Development, 25,64

Diesel engines
  Production, 37,39,40
  Licensed capacity, 37
  Supply, 38
  Requirements, establishment, 38,599
  Fourth Plan, 38-39
  Performance, 39
  Trawling, 41
  Fishing industry, 41-42
  Cost, 41-44
  Manufacturer, 44,46
  Subsidy, 45,47
  Fifth Plan, 599

Diesel oil
  Price, 80
  Excise duty, 80,82
  Subsidy, 82,83
  Cost, 103,106

Distribution, pattern of, 377-378,379

Diversification, 321,387

Drawback, 345,384,386,451

Dried fishery products
  Demand, 264
  Cost, 265
  Quality, 265-266,270
  Packing & storage, 266
  Exports, 360-363,369-373
  Domestic consumption, 373-376
  Distribution, 377-378
  India, 363

Drying
  Bombay duck, 195,268
  Fish, 195-196
  Laminated Bombay duck, 196
  Dried prawn pulp, 200
  Mechanisation, 268

Equipment, deck
  Trawl winches, 62
  Gurdies, 62
  Line hawlers, 62
  Power blocks, 62
  Steel wire ropes, 63
  Fishing floats, 63
  Electronic equipment, 74
  Radio telephones, 75
  Radar, 76
  Requirements, 77
  Specifications, 600-603

Expenditure
  Boat operation, 102-105
  Manning of vessels, 106
  Diesel oil, 106
  Crew's share, 106-107
  Depreciation, 107-108
  Interest on loan, 108
  Repayment of capital, 108
  Gross returns, 108

Exports
  Shrimp/prawns, 129,140,141, 147-148,307,311,314-315, 319,320,360,363,438,456,506, 507,509

Froglegs, 141,314,320
Lobsters, 141,302,314,319,320
Bombay duck, 268
Fish oil, 266
Fishmaws and sharkfins,
283-284,314,320,363,369,
370,438
Laminated bombay duck, 323,
352,439
Trend, 361-362
Fish, dried and frozen, 323,
360
Seafood industry, 386
Fourth plan, 292,293
Fifth Plan, 292,293
Tuna, 510,511
Bombay, 169
Cochin, 169
India, 283-284,292,293-294,
307,314-317,320,323,363
Malaysia, 570,511
Surinam, 509,510
Panama, 507

Export market

Sardines, 323,324
Clams, 323,324
Oyster, 323,324
Cuttlefish products, 323,
324
Bombay duck, 323,324
Eel, 324

Export price

Frozen froglegs, 327
Frozen lobster tails, 328
Frozen shrimp, 326,327

Finance, domestic

Investment, 418
Government's role, 420-421
Domestic finance, 423
Institutional finance, 423
Mysore, 425,444
North Kanara, 426
Mysore State Cooperative
Bank, 426
Ice plant,427,429,432,437
Fish meal plant, 427,429
Canning plant, 427,429
Fishery requisites, 428,430,
440
South Kanara, 428
South Kanara District
Cooperative Fish Marketing
Federation, 428
Mechanised boats, 427,429,432,
435,436,437,438,440,441,
444,447,448
Retail stall, 430,432
Tamil Nadu, 430,444
Madras Fishermen Cooperative
Federation, 431
Tirunelveli District
Cooperative Boat Building
Yard, 431,445
Fisheries Boat Yards at
Marina & Rayapuram,431
Transport, 432
Tirunelveli district, 433-434
Tamil Nadu State Cooperative
Bank, 433
Tirunelveli District
Cooperative Central Bank, 433
Tirunelveli District
Fishermen Cooperative
Federation, 434
Maharashtra, 436-438
Ratnagiri District Federation
of Fisheries Cooperative
Societies, 436-437
Freezing unit, 437
Cold storage, 437
Service stations, 438
Gujarat, 438-441
State Cooperative Apex Bank,
438
Gujarat State Cooperative
Bank, 439
Umbergaon Fishermen's
Sarvodaya Sahakari Society Ltd,
439
Processing, 440,445,447
Scheduled Banks, 441-449
Kerala, 444
Subsidy, 438,440-444
State Bank of Mysore,445-447
State Bank of India, 441-445

  Syndicate Bank, 447
  Canara Bank, 447
  Indian Overseas Bank, 447
  South Kanara Federation, 447
  Industrial Development Bank of India, 448-450
  Industrial Credit and Investment Corporation of India, 449
  Industrial Finance Corporation, 449
  State Finance Corporation, 449
  State Cooperative Bank, 449

Finance, international

  Japan, 452
  Switzerland, 452
  Yugoslavia, 452
  Sweden, 452
  France, 452
  Trade agreements, 452
  Norway, 453
  Cooley loans, 455-456,459
  IBRD, 457,459
  International Development Agency, 457
  World Bank, 457
  International Finance Corporation, 457,458,459
  Asian Development Bank, 458
  The South East Asian Fisheries Development Centre, 459

Financial assistance

  Japan, 461-465,497
  Corporation Tax law, 461
  The Fisheries Finance Corporation, 462
  Fishing vessel, 462
  Port Development, 462
  South Korea, 465-467
  Korean Development Finance Corporation, 466,497
  International Finance Corporation, 466
  Taiwan, 467
  Fishing boats, 467,468,
  Deep sea fishing, 468,472,474, 501,503
  IBRD, 468,497
  Sino-American Fund for Economic and Social Development, 468
  Hong Kong, 469,499
  Fisheries Cooperative Society, 469
  Singapore, 469,997,498
  Development Bank of Singapore, 469
  Asian Development Bank, 470, 497,498
  World Bank, 470
  German Credit Bank, 470
  Indonesia, 470,471,498
  Ceylon, 471-472,497
  Mechanised boats, 471
  Ceylon Fisheries Corporation, 471,472
  Pakistan, 472
  Agriculture & Development Bank of Pakistan, 473
  Pakistan Industrial Credit & Investment Corporation, 473,498
  Industrial Development Bank of Pakistan, 473,498
  Latin America, 475-477,497
  USA, 477-480,497
  Fish and wild life act,1956 477,497
  Vessel construction subsidy act, 480
  Registration of fishing vessels act, 480
  Canada, 480-483,497
  Europe, 484-489
  Fishery Bank of Norway, 484
  The State Fishery Bank, 484, 485,486
  Netherlands, 489-491,497
  Spain, 491-492
  United Kingdom, 492-495
  White Fish Authority, 492, 494,497

- Herring Industry Board, 494,497
- West Germany, 495
- Development Assistance
- Tax Law, 1963, 496
- Thailand, 498
- Inventory requisites, 498
- India, 499
- Reserve Bank of India, 501-503
- Industrial Development Bank of India,501
- Industrial Finance Corporation, 501
- Industrial Development Corporation, 501

Fish

- Freezing, 171-175
- Cost of production, 173
- Pre-shipment inspection,203
- Consumption, 389,461
- Japan
- Investment, 461
- Marketing organisations, 399-417

Fishing gear

- Types, 54
- Materials, 55-63
- Twine, cotton, 56-57
- Twine, hemp, 57
- Synthetic fibre, 57-58
- Nylon yarn, 58-59,61
- Polynamide yarn, 59
- Developments, 64-65

Fish Marketing Organisations

- Bangkok, 402-408
- Denmark, 413-414
- Hong Kong, 399-402
- India, 415-417
- Netherlands, 414-415
- Norway, 411-413
- Singapore, 408
- Tokyo, 409-410
- U.K., 410-411

Fishing vessels

- Construction, 27,29,32,53, 469
- Ferro cement, 29
- Cost, 32,36,480
- Imports, 36,48,455,501
- Payment to crew, 84-91
- Manpower, 91-102
- Finance, 427,469,478,494, 499
- Subsidy, 34,35,36

Fish meal

- Production, 270
- India, 270,274
- Raw material, 271-272,273
- Oil sardine, 272,273
- Fish meal plant, 272-273
- Preparation, method of, 273-274
- Composition, 274
- Specification, 275

Fish oil

- Raw material, 279
- Production, 279,280
- Yield, 279,283
- Exports, 280
- Sardine oil, 280,283
- Cost of production, 280-283

Fishmaws and sharkfins

- Exports, 283-284
- Preparation, 284-285,285-286
- Imports, 371
- Singapore, 372

Fish protein concentrate

- Cost of production, 288

Foreign exchange, 36,62-63,75, 451,452,473,520

Freezing

- Shrimp/prawns, 129,158-160, 162,166
- Distribution, locational, 130
- Kerala, 131

- Investment, 134
- Capacity utilisation, 135-136
- Cost, 163,166,167
- India, 302,162,253
- Japan, 461
- Equipment, 160
- Lobster tails, 167
- Froglegs, 168
- Fish, 171-175
- Turtle meat, crab meat, clams, mussel, 175
- Findings, 189-190
- CIFT, 169-170
- Collection of raw materials, 169

Freight rate

- Practice, 353
- Lobster tails, 354
- Froglegs, 354
- Rates, 355,356
- India, 355,356,357
- Freight investigation bureau, 357,358-359
- Subsidy, 358,359
- Railway freight, 388

Froglegs

- Freezing, 168,170
- Collection of raw materials, 169
- CIFT, 169,170
- Specification, 171
- Pre-shipment inspection,203
- Sampling, 205
- Froglegs, 314
- Freight rate, 354
- Shipment, defects, 332

Frozen products

- Imbalanced growth, 251
- Regulation of processing capacity, 251
- Freezing and packing, 253-255
- Inspection rules, 255
- Storage facilities, 256-257
- Transport, 256-259
- Packaging cost, 343

Grading

- Prawns, 159,178,208
- India, 159,256
- Lobster tails, 168
- Froglegs, 168,208
- Faulty practice, 331
- Sharkfins and fishmaws, 371
- Form for fish, shell, processing units & peeling sheds, 639-642

Hong Kong

- Financial assistance, 469,499
- Fishermen's cooperative society, 469
- Importers, 320,371
- Marketing organisation, 399-402
- Dried fish, 364
- Capital equipment, 383
- Raw materials, 452
- Fishery equipment, 452,454
- Sharkfins and fishmaws, 371
- Brazil, 509

Import duty

- Caprolactum, 60
- Plants and equipment, 498
- Indonesia, 498

Import entitlement, 335

Import policy, 382,385

Indonesia

- Joint venture, 511-512

Industrial Development Bank of India, 48,423,448,450

Infrastructure, 292,416,460, 470,477,483

International Bank for Reconstruction and Development, 457,459,468,497

Investment, 133,134,137,262, 292,342,418,419,420,421,457, 458,460,461,462,466,470,472, 474,476,482,483,489,491,492 495,496,497,499,502,504,514, 515

Japan
  Investment, 515
  Joint venture, 515-518
  Overseas Technical
  Cooperative Agency, 518
  Fish, 461
  Manpower, 100

Joint venture, 69,256,311,422,
  456,458,459,460,462,499,503,
  504,513,515,519,520,521

Laminated Bombay duck
  Processing, 196-197
  Packing, 197-198
  Exports, 323,358,438

Latin America
  Financial assistance, 475-
    477,497

Lobster tails
  Freezing, 167
  Preshipment inspection, 249
  Exports, 141,302,314,319,320
  South Africa, 302
  Freight rate, 354
  Shipment, defects, 332

Mackerel
  Canning, 183
  Processing, 183
  Cost of production, 184
  Landing, 72

Malaysia
  Exports, 510,511
  Joint venture, 510-511

Manpower
  Training centre, 91,92,503
  Indian merchant shipping
  act, 1958
  Shippers, 93,94,97,100
  Engineers, 93,94
  Deep sea drivers, 93,94,96
  Central Institute of Fisheries
  Operatives, 95,97,98,99,100
  Requirements, estimated, 96
  Fisheries education, 100
  Japan, 100
  India, 100-102

Marketing
  Gujarat, 390-392
  Maharashtra, 392
  Mysore, 392-393
  Tamil Nadu, 393-394
  Orissa, 394
  Uttar Pradesh, 394-395
  Kerala, 395
  Middlemen, 395
  Reserve Bank of India, 397
  Cooperative marketing, 398
  Fisheries corporation
  organisations, 399-417
  Competition, 302,321
  Joint venture, 521
  Shipping, 345-353
  Pack-out system, 305
  Joint marketing
  organisation, 300-302
  Direct Marketing
  organisation, 298-299
  Consignment vs. outright
  sales, 294-297
  Role of agents, 297-298

Mexico
  Joint venture, 505-506
  Method of payment to
  crew, 85-87

Netherlands
  Fish marketing
  organisation, 414-415
  Financial assistance, 489-
    491,497

Nicaragua
  Joint venture, 506-507

Nylon
  Availability, 59
  Demand, 60
  Capacity, 60
  Price, 60,61

  - Raw material, 60
  - Excise duty, 60,61
  - Production, 61

- Operation, Economics of
  - 13.8 metre trawler
  - Madras, 113-114
  - Visakhapatnam, 113-114
  - Kerala, 115-116
  - Veraval, 115-116
  - Goa-Mangalore, 115-116

  - 17.5 metre trawler
  - Maharashtra, 117-118
  - Goa-Mangalore, 119-120
  - Kerala, 119-120
  - Visakhapatnam, 121-122
  - Veraval, 121-122
  - Tuticorin, 123-124

  - 22.0 metre trawler
  - Maritime states, 125-126

  - 27.2 metre trawler
  - Maritime states, 127-128

- Packing
  - Shrimp/prawn, 166,333,339, 343-344,345
  - Cost, 167,343-344
  - Fish, 174
  - India, 202,253,259,312-313, 331,332,334,338
  - Dried prawn pulp, 199
  - Laminated Bombay duck, 197-198
  - Sardines, 181-182
  - Bombay duck, 196
  - Standards, 262
  - Dried fishery products, 266
  - Pack-out system, 305-306
  - Master cartons, 333,334,336
  - Inventory, 334
  - Polythelene coating, 334
  - Printing, 335
  - Labelling, 337-338
  - Marking, 337-338
  - Frozen and canned products,343
  - Drawback, 384

- Pakistan
  - Financial assistance, 472-473
  - Agriculture & Development Bank of Pakistan, 473
  - Pakistan Industrial Credit & Investment Corporation, 473,498
  - Industrial Development Bank of Pakistan, 473,498

- Panama
  - Exports, 507
  - Investment, 507
  - Joint venture, 507

- Payment to crew, methods of
  - Canada, 85
  - Mexico, 85-87
  - U.K., 87-88
  - Norway, 88
  - Poland, 89
  - India, 89-90

- Peeling sheds
  - Compulsory in-plant inspection, 247
  - Design, 610-615
  - CIFT, 610-615

- Pelagic fisheries
  - Fishing, 70
  - Purse-seine, 70,72
  - Pumps, fish, 71
  - Tuna industry, U.S., 72
  - Anchovy fisheries, 72
  - Landings, 72
  - Mackerel, 72
  - Sardine, 72
  - Beach seine, 72
  - Boat seine, 72

- Pepton, bacteriological
  - Cost of production, 290

- Pomfret
  - Gujarat, 390
  - Marketing, 390

- Prawn pulp, dried, 198

Production, problems
  Raw material, 1
  Communication, 1
  Technical personnel, 1
  Repair and maintenance, 1,46
  Transport, 1
  Fishing gear, 2,15
  Fishing craft, 2,3,4,47
  Dugout canoes, 3,5
  Catamaran, 3,5
  Canoes, 3
  Masula, 3
  Ganges dinghees, 3
  Mechanisation, fishing fleet, 6,7
  Machwas, 3,6
  Kotias, 3
  Lodhias, 6
  Nava, 6
  Batchan, 7
  Steel vessels, 11,19
  Fishing vessels proposed, 13
  Medium and large vessels, introduction of research vessel, 14,16
  Research on fishery biology, 15
  Research on fish processing, 15
  Exploratory operation, 15,32
  Pelagic fisheries, 15
  Fishing guards, 16
  Factory vessels, 16
  Boat building, 17,18,21,22, 23,27
  Boats, 17,25,30,32
  India, 18
  Copper, 19
  Aluminium alloy soketing 19
  Fibre glass, 19,27,28
  CIFT, 19,28,56,77,158,169, 170,171,201,251,258,270, 280
  Fishing vessels, 27
  Deep-sea fishing organisation, 19
  Consortia, west & east-coasts 20
  Dock, Mazagon, 20
  Engines, Kirloskar, 20,39
  Fish finders, FURUNO, 20
  Design of the vessels, 21
  Shrimps trawlers, 22,23,24,26,64
  Pysco, rockport, 22
  Fishing boat, import of, 23, 26
  Storem '8', 25
  Fishing trawler GDR, 25,33
  Design development, 25,64
  Central Marine Fisheries Research Institute, 27

Quality control & Pre-shipment Inspection
  Mexico, 210,634-638
  India, 203-209,235
  Canada, 211-214
  USA, 218-214
  Inspection Bills, 91st Congress, 219-220
  Inspection scheme, USDI, 222-228
  Food & Drug Administration, 224-228
  In-plant quality control, 239
  Denmark, 228-229
  Spain, 229
  Netherlands, 229
  Norway, 230-231
  Korea, 231-233
  U.K., 233-234
  White Fish Authority, 233
  Japan, 234-235
  Japanese Frozen Food Inspection Corporation, 234
  Compulsory In-plant Inspection, 247

Peeling sheds, 247
Processing factories, 248
Fishing boats, 248
Calgon, 249
Prawn pulp, dried, 249
Lobster tails, 249
Export inspection agency, 365,367

Raw material

Price, 151,154-155,161,252, 303,305,306
Freezing, 152
Canning, 152
Procurement, 153
Source, 153
Purchase tax, 155
Handling, 155
Peeling sheds, 156,157
Shrimp, 164
Cost, 150,165-166
Collection, 169
Supply, 184,303
Preservation, 187-188
Fish meal, 271-272,273
Fish oil, 279
Import licences, 382
Ethylene dichloride, 287
Isoprophyl alcohol, 287
Ethyl alcohol, 287
Hexane, 287
Acetic Acid, 287
Peptone, 287
Trash fish, 289
Difcopeptone, 289

Research

Fishing gear, 15
Fishery biology, 15
Fish processing, 15
Financial assistance, 493

Sampling

Frozen and canned products, 205-207
Tolerance limit, 208
Reduced sampling scheme, 216-218
Method, 225-226

Sanitary regulations, 211,604-605,605-609

Sardines

Canning, 180
Processing, 180-181
Machinery requirements, 182-183
Cans, 341
Packing, 181-182

Shipping

U.S. ports, 347-348
U.K./continental ports, 348-349
Japan ports, 349
Near and Far East countries, 350
Australia port, 350-353
Frozen cargo, 359-360
Reefer vessels, 388

Shrimp/prawns

Yield, 65
Goa, 65
Ratnagiri, 65
Tuticorin, 65
Kakinada, 65
Fishing, 66
Mexico, 66
Operation, 67
Price, 145,152
Exports, 129,140,141,147, 307,311,314-315,319,320, 360,363,438,456
Handling, 162
Canning, 175-179,275
Cost of production, 179
Pre-shipment inspection, 203,255
Sampling, 205-206
Specifications, 207
Freezing, 129,162,275
Finance, 476
Utilisation of waste, 275-277
Packing, 166,333,339,343-344

Singapore
  Fish marketing organisation, 408
  Financial assistance, 469, 497,498
  Development Bank of Singapore, 469

Solar radiation, 201

Specification
  ISI, 204-205
  17.5 m trawler, 534-546
  60' trawler, 547-562
  Storem 8, 563-577
  TR-27, stern trawler, 578-585
  Cutter HT311 sk. (GDR) fishing vessel, 586-598
  Electronic equipment, 600-633
  Shrimps/prawns, frozen, 622-624,632-633
  Shrimps/prawns, canned, 625
  Fish meal, 631
  Froglegs, frozen, 626
  Sharkfins, 627
  Fishmaws, 628
  Canned fishery products, 629-630

State Trading Corporation, 365-366

Storage
  Frozen storage facilities, 256-257
  Dried fishery products, 266
  Cold storage, 188-189
  Finance, 437

Subsidy
  Maharashtra, 31
  Gujarat, 31,438
  Mysore, 31
  Tamil Nadu, 31
  Kerala, 31
  Boat, 32,47,4
  Vessels, 34,35,36
  Norway, 488,489
  U.K., 492,493
  Diesel engines, 45,47
  Fishery equipment, 47
  Diesel oil, 82-83
  Freight, 358,359
  Japan, 481,483

Thailand
  Financial assistance, 498

Tuna
  Fishing, 67,69
  Landings, 67
  Japan, 68
  Exports, 69510,511
  Joint venture, 69
  Malaysia, 510-511
  Canning, 185
  Cost of production, 186
  Investment, 466

Tunnel dryer, 201

U.K.
  Financial assistance, 492-495
  White fish authority, 492, 494,497
  Herring industry board, 494, 497
  Fish marketing organisation, 410-411

U.S.A.
  Financial assistance, 477-480,497
  Fish and wild life act, 1956, 477,497
  Vessel construction subsidy Act, 480

CENTRAL FOOD TECHNOLOGICAL RESEARCH INSTITUTE, * MYSORE. *
LIBRARY